

Developing Curriculum for a Ladderized  
Master in Disaster Risk Management Program:  
Case of the Camarines Sur State Agricultural  
College,  
Bicol – Philippines

CASE STUDY WRITERS

Cely S. Binoya, Ph.D.  
Asuncion A. Orbeso, Ph.D.  
Marito T. Bernales, LLB, Ph.D.

# October 2008

## EXECUTIVE SUMMARY

The idea of developing a curriculum on Disaster Risk Management came with a sense of urgency to meet the demands for addressing disaster cases that abound the Bicol region. The sad experiences that Bicol had since the 70's with Typhoon Sining and the most recent disaster cases due to Typhoon Milenyo and Reming in 2006, which brought tremendous risks and disasters to the human populace in the Region, triggered the academe to rethink what the country is currently doing to manage risks brought about by disastrous events, hence the curriculum.

In developing the curriculum, the process used was the DACUM (an acronym for developing a curriculum). It is a storyboarding process that provides a picture of what the worker does in terms of duties, tasks, knowledge, attitudes, skills (KAS), and in some cases the tools the worker uses. The information is presented in graphic chart form and can include information on critical and frequently performed tasks and the training needs of workers. The output of the DACUM process serves as guide in developing a curriculum that will appropriately and precisely meet the requirements of the industry which is the target market of the graduates.

Grounded on the philosophy that experts practitioners in DRM are the best sources of information in identifying duties, tasks, and the KAS necessary to effectively perform DRM, the first stage in the DACUM process was identifying the expert practitioners in the field and inviting them to the DACUM workshop. During the workshop, a briefing on the DACUM process that will transpire was given to the participants, including clarification of roles that will be played by each participating groups, which include the facilitator, the experts, the recorder and the observers. With the guidance of a DACUM facilitator, these experts defined their major areas of responsibility (duties) and their associated tasks in DRM. In addition, they were made to articulate on the following: 1) the behaviour, attitudes and traits required for the job, 2) general skills and knowledge needed to be a successful DRM practitioner, 3) tools and equipment that they use in performing their tasks, and 4) future trends in the practice of DRM. The product of the workshop is a DACUM Chart which was used by the curriculum writers in the College who were the observers during the DACUM workshop.

When writing the curriculum, the writers were guided by the format prescribed by CHED which include the following parts: Rationale, Objectives, Program Development, Target Clientele, Market Analysis, Scheme for Offering the Course, Faculty Profile, Laboratory facilities, Financial Requirements, then the Curriculum proper which include the Prospectus and Course Descriptions. Usually, CHED has a Memorandum Order (CMO) which is used as guide by Curriculum Developers in writing a curriculum, however, since the Master in Disaster Risk Management is a pioneering endeavor in the country, no CMO was available, hence only the CHED format was used.

After writing the curriculum, the contents were validated with the target market – the members of the MDCC, PDCC and selected faculty of the College, and to some DRM international consultants in the country and abroad. This was done through a workshop and those who were not able to attend were reached through internet. After getting all the inputs, the curriculum was finalized and presented to the College Curriculum Committee, then to the Faculty Council. When this was approved at the level of the College, this was submitted to the CHED Office of Programs and Standards (OPS) in the Region and at the Central Office, after which, the program was finally presented to the College Board of Trustees (BOT) for final approval.

Initial implementation of the program was in June 2008. The scheme of program implementation was ladderized. Courses were offered in trimester, and delivery mode is modular. One module is carried out in a month time, teaching method used include multi-media presentations with field immersion activities. Faculty members are the expert practitioners of DRM who were very instrumental in developing the curriculum. Part of the institutionalization mechanism of the College is to train CSSAC faculty to handle the course, hence seven faculty members were among the initial 45 enrollees in the program, who will eventually be tasked in developing instructional modules for the various courses offered in the program.

Program implementation is evolving, hence process documentation is being made by the Curricular Reform and Development Office and the stakeholders – the Dean of the GS, Faculty members, and students. The activity aims to track down the strengths and weaknesses of program implementation and to ensure meeting the desired objectives of the program, which include among others, producing knowledgeable and competent disaster risk managers for Bicol and the whole Philippines.

## LADDERIZED MASTER OF SCIENCE IN DISASTER RISK MANAGEMENT

### I. RATIONALE

The idea of developing a curriculum on Disaster Risk Management (DRM) came with a sense of urgency to meet the demands for addressing disaster cases that abound the Bicol region. The sad experiences that Bicol had since the 70's with disastrous Typhoon Sining and the most recent disaster cases due to Typhoon Milenyo and Reming in 2006, the volcanic eruptions, floods, and other natural and man-made calamities necessitate a holistic approach to Disaster Risk Management (DRM) to substantially reduce losses of life and properties.



**Figure 1. CSSAC Administration Building after Typhoon Reming in 2006**

Such tremendous risks and disasters to the human populace in the Region, triggered the academe to rethink what the country is currently doing to manage risks brought about by some disastrous events. It is not only the responses to deal with the consequences of disasters that have to be addressed and made more effective, but more so, the efforts to assess and reduce risks beforehand and to efficiently and effectively recover after.

The three important stages of DRM namely, *Disaster Risk Reduction, Response and Recovery* all have distinctive objectives and are equally important. Activities that are normally overlapping should be properly organized and incorporated in all disaster risk management decisions. Further, DRM decisions should be based on a socially, politically, culturally, economically and environmentally sustainable foundation.

In order to meet these needs for a more holistic approach to Disaster Risk Management, a Ladderized Master in Disaster Risk Management was designed by CSSAC, submitted for approval and implemented effective first semester of School Year 2008-2009.

### II. FORMULATING THE OBJECTIVES

In formulating the curriculum objectives, the job, duties and tasks of the potential graduates were considered, to wit:

The Graduates of the Master's program will have the job of an Incident Commander, while the Graduates of the Post-Baccalaureate Diploma Program will have the job of an Operational (Field/Ground) Commander. As

such, they are expected to possess certain level of competencies required to perform the jobs, which are stipulated in the following objectives:

1. Work theoretically and practically in all the stages of disaster risk management - disaster risk reduction, response and recovery, and understand how these are interconnected.
2. Analyze, evaluate, and manage the dynamic factors of disasters on an individual and community levels to mitigate effects of hazards.
3. Analyze and evaluate the underlying physical/ environmental, social/political/cultural, economic, legal/institutional/organizational and health-related psychological aspects that influence the vulnerabilities and capacities of individuals and communities to prepare for and prevent disasters.
4. Work strategically and operationally in all stages of DRM and be able to:
  - a. Monitor and evaluate hazards / risks through the conduct of research, trending, mapping and establishing database for use in planning, and in implementing risk reduction and preparedness actions;
  - b. Analyze and evaluate the needs of disaster struck individuals and communities, prioritize and implement, and coordinate /collaborate for response activities; and
  - c. Analyze and evaluate recovery needs, and implement, coordinate, collaborate and evaluate activities for sustainable recovery.
5. Collect documents, analyze and communicate information regarding risks, humanitarian needs, or lessons learned from earlier disasters in order to mitigate future disasters/calamities.

### III. PROGRAM DEVELOPMENT

To ensure that the program meets the needs of the prospective clients of formal training, the Curricular Reform Committee conducted a DACUM training in May 2008 and a workshop from Dec. 17-18, 2007. Experts representing the RDCC, Philvolcs, Red Cross, DENR and the CSSAC Faculty members with relevant fields of expertise were invited to the DACUM workshop. This was because, the DACUM process believes that the DRM practitioners are the very people who could define well their jobs, tasks, and the KAS needed in the practice of their profession.

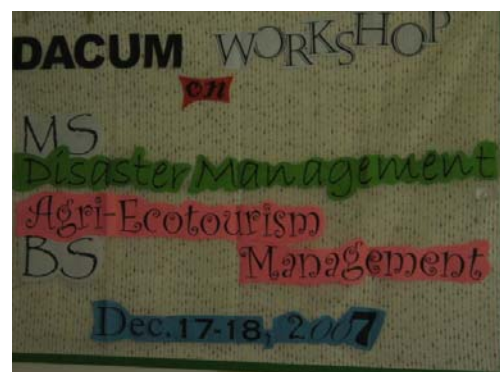


Figure 2. The backdrop of the DACUM workshop

## A. The DACUM Process



**Figure 3. Dr Cely Binoya brainstorming on the jobs, duties, and tasks of a graduate of MDRM course being developed**

The DACUM process involved identification of the jobs, duties, and tasks of an Incident Commander and the Field / Ground or Operations Commander in DRM operations. Materials needed in the practice of DRM, core and ethical values and future trends in DRM were also identified.

The output of the workshop was a DACUM Chart and a list of subjects that have to be included in the course. This DACUM chart was used by the Curriculum writers of CSSAC in developing the curriculum. In January and February 2008, a series

of Curriculum Writeshops were held to formulate course descriptions and outline of topics, identify course requirements, determine units to be assigned, identify faculty who will handle the course, determine the budgetary requirements, etc.

## B. Conduct of Feasibility Study

As a requirement of CHED, the marketability of the program was assessed through a formal survey involving respondents from the RDCC, LGUs, Philvolcs, Red Cross, Media, PAGASA, DSWD, Fire Bureau, DA, DENR –CENRO, and some faculty representatives. Secondary data generated through the NDCC website was also used. The market study tried to establish the need for offering the course, knowledge gaps or training needs of potential enrollees and willingness of the LGUs to spend for scholarships of their staff and/or individual's willingness to pursue the course.



**Figure 4 Participants of the DACUM workshop**

### C. Program Approval

After the writeshops, the curriculum was presented to the Graduate Faculty Council for critiquing, after which, another workshop was held to



**Figure 5. Dr Asuncion Orbeso presenting the MDRM curriculum to the Graduate Faculty Council**

revise the proposed curriculum. The revised curriculum was further validated and reviewed by representatives from the LGU – MDCCs who joined the team of CSSAC faculty to validate the curriculum. The final version of the curriculum was presented and finally approved by the College' Academic Council in April 2008 for endorsement to CHED ROV for review of the technical panel of the Office of Programs and Standards. However, since the program was a pioneering attempt on DRM, the CHED Regional Office has no standards yet which could serve as basis for program

assessment, hence, the curriculum was forwarded to CHED Central OPS for assessment by the Technical Panel. Similarly, CHED Central OPS could not give their comments on the program due to its newness, hence, when the program was finally presented to the College BOT, and knowing that the graduate program was very necessary in the Region, the Board, through the CHED Chair approved finally its implementation effective May 23, 2008. As of this writing, CHED has already submitted the curriculum for review of the Technical Panel for Management, who presumably felt that their group is inappropriate to conduct a review of the curriculum, hence the said curriculum was transferred to the Technical Panel for Criminology. Feedback of this Technical Panel is awaited for the further improvement of the curriculum.



**Figure 4. Presentation of the curriculum to the Administrative Council**

### D. Social Marketing

While the program was being developed, the college was already making noise about its implementation which will start on the first semester of SY 2008 – 2009. As a social marketing strategy, the program was formally launched during the Charter Anniversary of the College last March 16, 2008. LGU Executives, RDCC, PDCC, MDCC and BDCC representatives, and some representatives from the Manila Observatory and a Consultant of UNDP were invited during the launching for massive information dissemination and to get their support in program implementation. The activity aimed to get the commitment of the



**Figure 6. Social marketing of the curriculum during the Charter Anniversary celebration**

LGU Executives to provide scholarships to the members of the Disaster Coordinating Councils for their formal training under the M DRM program.

### **E. Program Implementation**

After program approval, all necessary details for program implementation like advertisements, faculty identification and invitation, workshops for syllabi and module preparations, faculty and staff meetings, laying down of expectations from the school and faculty, acceptance of applications for enrolment, etc. were all done. Enrolment period covered a month, from June 1 to 30 and classes started on July 2. Constant meetings of faculty and team-teaching were done for more effective program implementation. Feedbacks from the faculty and students were constantly taken to improve program implementation. Monitoring and evaluation were also regularly done .

## **IV. TARGET CLIENTELE AND MARKET ANALYSIS**

When developing a curriculum, it is important to identify potential takers of the program. Specifically for the Diploma in Disaster Risk Management leading to Master in Disaster Risk Management, the program was deemed relevant to all professionals – Doctors, Nurses, Religious and Social Workers, Engineers, Military Officers, Fire Marshalls, Agriculturists, Veterinarians and Local Government Officials, particularly the Local Chief Executives and the Planning Officers, etc.

This claim is strengthened by Presidential Decree 1566 which legitimized the formal establishment of the National Disaster Coordinating Council (NDCC), Regional Disaster Coordinating Council (RDCC) and Local DCCs since 1978. This was issued to strengthen the Philippine disaster control capability and to establish a community disaster preparedness program nationwide.

Among the salient provisions of the Decree are the following: 1) there must be a State policy on self-reliance among local officials and their constituents in responding to disasters or emergencies; 2) Organization of disaster coordinating councils from the national down to the municipal level; 3) Statement of duties and responsibilities of the NDCC, RDCCs and LDCCs; 4) Preparation of the National Calamities and Disaster Preparedness Plan (NCDPP) by OCD and implementing plans by NDCC member-agencies; 5) Conduct of periodic drills and exercises; and 6) Authority for government units to program their funds for disaster preparedness activities in addition to the 2% calamity fund as provided for in PD 474 (amended by RA 8185).

The NDCC, which was created on October 19, 1970, is the forerunner of DRR created under PD 1566. It serves as the highest policy-making body for disaster management in the country and includes almost all Department Secretaries as members. The original composition of the NDCC was as follows:

Minister of National Defense-Chairman, and the members include the Minister of Public Works and Highways, Minister of Transportation and Communications, Minister of Social Services and Development, Minister of Agriculture, Minister of Education, Culture and Sports, Minister of Finance, Minister of Labor and Employment, Minister of Trade and Industry, Minister of Local Government and Development, Minister of Health, Minister of Natural Resources, Minister of Public Information, Minister of Budget, Minister of Justice, Presidential Executive Assistant, Chief of Staff, Armed Forces of the Philippines, Secretary-General, Philippine National Red Cross, and the Administrator of the Office of Civil Defense who is also a member and the Executive Officer of the NDCC. Currently, the NDCC is still constituted by equivalent departments of the ministries above stated.

As per the mandate, the disaster coordinating councils (DCCs) from the regional, provincial, city and municipal level, are composed of representatives of national government agencies operating at these levels and local officials concerned. PD 1566 particularly stipulates that the responsibility for leadership in disaster risk management rest on the Provincial Governor, City Mayors and the Municipal Mayors / Barangay Chairman, each according to his area of responsibility.

Considering the above premise, the proposed Graduate Program has a captured market in Bicol. The felt need for this program is urgent since various calamities have struck the region that brought high degree of disasters resulting to losses in life and properties. Being situated within the Ring of Fire where the most frequent of all calamities such as typhoon develops, Bicol therefore experience an average of 16 typhoons yearly. Consequently, it has been recorded as one of the most depressed regions in the country. Particularly in 2006, Bicol was struck by at least 3 typhoons and Typhoon Reming (Durian) was the most destructive leaving over a thousand casualties and more than 180,000 houses totally destroyed in Albay and the rest of the Bicol region. Destruction to properties related to typhoons amounted to around P20B for 2006 and until now, the region is still enduring the pains brought about by such disaster.

It is also good to mention that although there are now efforts to build local capacities for disaster risk management, there is a need to professionalize the DRM process through formal education and this graduate program is an answer to the urgent need for holistic and more systematic DRM in Bicol.

## **V. DESCRIPTION OF THE COMPETITION**

Description of the competition is important to help the school determine the sustainability of the program. Specifically for Bicol, findings showed that there had been initiatives to offer a graduate program in Disaster Management. The Universidad de Sta. Isabel (USI) has a graduate program on Master in Management major in Disaster Management,

however, USI has not officially started offering the program due to lack of experts who can handle the course. The Naga College Foundation has a project titled "Handang Comunidad, Malayo sa Calamidad: A Disaster Preparedness Program of NCF". The coverage of the program include the establishment of a weather station specific for typhoon forecasting, since PAG-ASA Camaligan is on flood forecasting, conduct of trainings in the barangays of Naga City on disaster risk management, production of Komiks for distribution in the barangays, and establishment of a bagyo website. This project will start this 2008. Based on the interview with the project proponents, they will be sending their trainers to CSSAC to study MS in DRM to build their competence on the subject. The Bicol University (BU) will also offer a Diploma course on Public Safety starting June 2008. Aside from the above, no other schools in the Philippines offer a similar program.

Although the program offering of BU may have a semblance to the proposed curriculum, the scope of operation of BU will be Albay and Sorsogon while CSSAC will cover Camarines Sur and Camarines Norte, although stakeholders from the whole of Bicol region will be most welcome if they so desire to study in CSSAC.

## **VI. DESCRIPTION OF MANAGEMENT**

The special program was implemented by the CSSAC Graduate School in partnership with local institutes in CSSAC like the Institute of Agricultural Sciences and Environmental Management, Engineering and Technology, Development Education, Economics and Management, and the Arts and Sciences. At least 20-30 students were targeted for the program to become self liquidating, however, for the first semester, 45 students have enrolled in the program. This number is more than sufficient to pay off for the honorarium of faculty and for the operation of the curriculum.

Some institutions which were consulted during the curriculum development phase were also tapped as partners. A memorandum of agreement will be forged by the College among relevant agencies for sustainable partnership in support of program implementation. These institutions include: the PAG-ASA, DOST; Regional Disaster Coordinating Council, Manila Observatory, Ateneo de Mla, Provincial Disaster Coordinating Council, Phil. National Red Cross, Philippine Volcanology, the Center for Disaster Preparedness and the Mines and Geosciences Bureau. A Bicolano Consultant of UNDP on DRM was also tapped to teach the first module of the course and to team teach in the offering of the second module.

### **A. Course Monitoring And Evaluation (M&E)**

Monitoring of students' performance was done through class recitations, class projects, case analysis, reports, etc. These requirements were

prescribed in the syllabus and modules which were used by the faculty in teaching the course. Evaluation of students' performance was also based on the outputs of monitoring activities and long exams, which were also prescribed in the syllabus.

Still part of the M&E scheme was the conduct of a meeting after the end of the first semester to thresh out problems of the management, the faculty and the students.

## **B. Course Offering Scheme**

Since the target clients may not really need to finish a Masters Degree to generate required competencies in DRM, the ladderization scheme per EO 358 was adopted. The first year was for a Post-Baccalaureate Diploma Program in Disaster Risk Management. There will be three semesters (Trimester) in a year with three subjects offered per semester. The requirement for graduation in the Diploma Program is a Special Problem in DRM.

If the student decides to pursue further to a Master's degree, the students will have to take an additional 21 units, including the conduct of Thesis as a requirement for graduation. In all subjects to be offered, the delivery mode will be modular. Field immersions will be provided locally or internally when necessary. Partnership with international organizations will be forged to facilitate international immersion or student exchange.

Students are also brought to Regional conferences and forum to enhance knowledge learned in the classroom and to keep updated



**Figure 8. MDRM Faculty and students attending conference on risk mapping**

with information necessary in their DRM practice. So, last November 18, the faculty and students of MDRM attended the Regional Conference on



**Figure 7. Conference on Risk Mapping towards saving lives in Bicol held in Ateneo de Naga last Nov. 18, 2008 was attended by faculty and students of**

Regional Conference on Risk Mapping for Saving Lives in Bicol, where the Scientists from the Manila Observatory and from UP Diliman presented their research outputs on risk mapping in the Philippines.

### C. The Faculty Members

The offering of a curriculum was backstopped by competent faculty members, either from relevant external agencies or from the college. For this program offering, the faculty was constituted by a multi-disciplinary pool of Experts in DRM and related fields in the Region, including local faculty members. Per result of the DACUM, the following Experts will constitute the Faculty of the MS in Disaster Management:



**Figure 9. The HRO, Asso Dean and Dir. of Curricular Reform & Devt. assessing the qualifications of**

#### Full Time Faculty from CSSAC

Dr. Yolanda Agawa	- BS Civil Engineering, MRM and Ph.D. in Development Education Prof.
Dr. Cely S. Binoya	- Ph.D. in Extension Education; Knowledge Management, Research, And Facilitation Expert
Engr. Jennifer Eboña	- MS in Agricultural Engineering/ Environmental Science, Expert in Water Management
Prof. Melissa Francia	- BS Nursing, MS in Environmental Science
Dr. Celerino Llesol	- Ph.D. in Human Resource Management/ LLB
Petronilo Muñoz, Jr.	- BS Forestry, MS in Resource Management, GIS Expert
Dr. Gloria B. Osea	- MS Crop Science, Ph.D. in Development Management
Prof. Lilia Pasiona	- BS Biology, MS in Environmental Science
Engr. Joel Sadol	- MS in Agricultural Engineering
Ms. Flordeliza Valenzuela	- BS Biology, MS in Environmental Science

#### Part time Faculty Experts in DRM:

Prof. Dennes T. Bergado	- AIT, Thailand
Engr. Cedric Daep	- Public Safety and Engineering Office, Albay
Ms. Arlene Dayao	- Supervising Meteorologist, MGB Bicol
Dr. Carlos C. Galvez	- Chief, MCDDC – Labo, Camarines Norte
Mr. Juan Blenn I. Huelgas	- UNDP Consultant on DRM
Engr. Eduardo Laguerta	- Phivolcs, Legazpi City
Dr. Ramon Lim	- Philippine National Red Cross
Engr. Alvin Magdaong	- Office of the Regional Civil Defense
Engr. Cora L. Samar	- Chief Meteorologist, PAGASA Bicol

Others who will be identified as the need arises

#### **D. Laboratory Facilities**

For the laboratory facilities, a Memorandum of Agreement will be forged with the following Regional Offices: PAGASA – Camaligan, Camarines Sur; PhiVolcs – Legaspi City; DOST – Regional Office in Legaspi City and Provincial Office in Naga City; Mines and GeoSciences Bureau in Legaspi City; Public Safety Office in Albay; ATI in Bangkok, Thailand and JICA in Japan. A MOA will also be secured between CSSAC and NCF for access to the NCF Weather Station for typhoon tracking.

### **VII. FINANCIAL REQUIREMENT**

#### **A. Source and Uses of Funds**

For its initial implementation, the program was financed using College income and fees collected from the students. The details of the budgetary requirements are presented in Table 1. Other fund sources will be tapped to supplement tuition fee collections, e.g. solicitation from the Congressman of the 2nd district of Camarines Sur.

Table 1. Budgetary requirement necessary to offer the course in two years.

<b>Object of Expenditures</b>	<b>Budget (Php)</b>
A. Salary / Honorarium of faculty	
For Diploma program, 432 hours @ Php 300 – 1,000 per hour**	129,600 - 432,000
For MS program, 432 x 3 batches @ Php 300 – 1,000 / hr**	388,800- 1,296,000
B. Books	
18 Modules x 10 books @ Php3,000/book	540,000
C. Laboratory Facilities (MOA)	150,000
D. Immersion Activities Php 10,000/ subject x 18	180,000
E. Capability Building Program for faculty @ Php20,000 x 15	300,000
F. Buildings for lecture and laboratory*	0
G. Supplies and Materials Php 5,000/ subject x 18	90,000
<b>Total</b>	<b>1,778,400 – 2,988,000</b>

\*Rooms in the Institute of Graduate and Policy Studies and relevant Laboratory facilities in CSSAC will be used

\*\* Rate depends on the qualification of the visiting professor or faculty

## **B. Profitability Indicators and Analysis**

For a new program like this, the Return on Investment (ROI) was used to measure profitability of program operation. For CSSAC, an ROI of 2.46% on the first year of operation was acceptable, since according to the members of the Faculty Council, service more than profit must be the aim for offering the program. From the FS prepared, notably, the ROI will increase to 40% from the third year of operation and will stabilize up to the fifth year, depending on the number of enrollees.

## **VIII. PROBLEMS ENCOUNTERED IN PROGRAM IMPLEMENTATION**

A number of problems were threshed out during the M&E meeting of the stakeholders. Problems were categorized into two, those perceive by the students and those perceived by the management and faculty.

### **A. Students' Problems:**

1) the scheduling of classes which covers 8 hours of meeting on a Saturday and the teaching methodology of a Professor where students felt too much is given (information overload) and there is not enough time for them to digest and reflect on the inputs; one student describes it as too much for less;

2) despite the abundance of reference materials brought in by the expert Professors, the absence of course modules which could serve as self study guide of students was perceived to be a problem by the students;

3) despite program orientation, the absence of syllabi for the first three courses was perceived as a problem which led to the overlapping and duplication of some topics in the course of content delivery; and

4) less immersion / grounding activities which leave the students to the theoretical level of DRM.

### **B. On program management:**

1) one problem sounded off was the absence of Program Coordinator who will manage the implementation of the program from faculty selection to program implementation and even the payment of faculty honoraria;

2) the tri-mester schedule of the program has not been institutionalized yet in the system of operation of the Registrar's Office,

3) the delay in the approval of guidelines for hiring of visiting professors and rate of honoraria consequently delayed the payment of honoraria to the Visiting Professors;

4) the moratorium on increase in tuition fees which derailed the implementation of the approved fees will likely put the school's implementation of the program to a losing end; and

5) absence of holistic implementation plan that could map out potential problems and coping mechanisms.

## **IX. LESSONS LEARNED**

From the experience of CSSAC in institutionalizing the MDRM curriculum, some learning insights are useful, as follows:

1) Curriculum development is an evolving process. Approval and implementation of a curriculum do not mean everything is done. Program management should continually make sure that everything necessary for successful program implementation are in place e.g. implementation policies and guidelines, syllabi, modules, competent faculty, a management team, and qualified students, etc.

2) Monitoring and Evaluation – this activity must be regularly done. Norms must be established to ensure quality of output and M&E instruments must be developed to facilitate conduct of the activity. Results of M&E must be used for improving the curriculum per se and its implementation. All major stakeholders must be involved (program management, faculty and students) in the M&E process.

3) For an effective implementation of a modular approach to instruction, Modules must be prepared before hand. However, since this is a pilot case, modules must be developed side by side with program implementation. Effective knowledge management strategies must therefore be put in place to capture, document and put into writing the knowledge and experiences shared during the course of program implementation.

4) Linkage development must be pursued to tap available resources within the country and abroad for a meaningful implementation of the curriculum, e.g. the Asian Institute of Management, Development Academy of the Philippines, Center for Disaster Preparedness, Asian Disaster Preparedness Center, World Bank Institute, Schools in London, Thailand, USA and India, etc. Potential faculty and student exchange must be arranged in the process of linkage development for better knowledge management in DRM.

5) The program must also be accredited and linked to the national implementing body for DRM, which is the National Disaster Coordinating Council (NDCC) so that channeling of funds and expertise could be facilitated.