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2009-2010
修士課程「防災政策プログラム 水災害リスクマネジメントコース」 実施報告書

平成22年10月



ICHARM

FWRI

UNESCO
United Nations
Educational, Scientific and
Cultural Organization

独立行政法人　土木研究所
水災害・リスクマネジメント国際センター（ICHARM）

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この報告書は、独立行政法人土木研究所理事長の承認を得て刊行したものである。したがって、本報告書の全部又は一部の転載、複製は、独立行政法人土木研究所理事長の文書による承認を得ずしてこれを行ってはならない。

土木研究所資料
第4182号　2010年10月

土 木 研 究 所 資 料

2009-2010
修士課程「防災政策プログラム
水災害リスクマネジメントコース」
実施報告書

平成22年10月

独 立 行 政 法 人 土 木 研 究 所
水災害・リスクマネジメント国際センター (ICHARM)

土木研究所資料
第4182号　2010年10月

2009-2010
修士課程「防災政策プログラム
水災害リスクマネジメントコース」
実施報告書

水災害研究グループ　　国際普及チーム

水災害・リスクマネジメント国際センター（ICHARM）は、政策研究大学院大学（GRIPS)、（独）国際協力機構（JICA）と連携し、2009年9月28日から2010年9月18日にかけて、1年間の修士課程『防災政策プログラム　水災害リスクマネジメントコース』を実施した。学生は、主として発展途上国の洪水関連災害防止・軽減に係る防災実務を担当する技術職員12人である。

本コースでは、水災害被害軽減の総合的計画立案、実践活動に専門的な知識を持って参加できる実践的人材を養成することを目的としている。

コース前半では主に講義・演習を実施し、コース後半では学生の個人研究のために時間を充て、完成度の高い修士論文を作成できるよう配慮した。また、日本の治水技術を学ぶために適宜現地見学や演習を実施した。

本報告書は、コース内容について報告するとともにコースに対する評価を行い、次年度の改善に資するものである。

キーワード：研修、修士課程、防災、洪水

2009-2010 修士課程「防災政策プログラム 水災害リスクマネジメントコース」
実施報告書

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参考資料 5-4	第 4 回アンケート結果（2010 年 3 月実施）
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＜Opening Ceremony＞（2009 年 10 月 8 日）（役職名は当時のもの）



坂本　土木研究所理事長の挨拶



Jerry Austria Fano 氏の挨拶



佐藤　JICA 筑波所長の挨拶





集合写真

Photo-1

＜講義の様子＞（役職名は当時のもの）



竹内邦良 教授（ICHARM センター長）



Jayawardena 教授（ICHARM 研究・研修指導監）



田中茂信 教授（ICHARM グループ長）



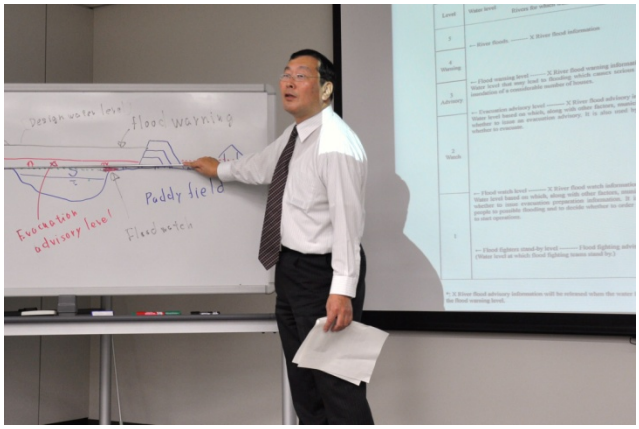
福岡捷二 教授（中央大学）



石川忠晴 教授（東京工業大学）



江頭進治 教授（ニュージェック技師長）



工藤啓　教授（ICHARM 上席研究員）



深見和彦　准教授（ICHARM 上席研究員）



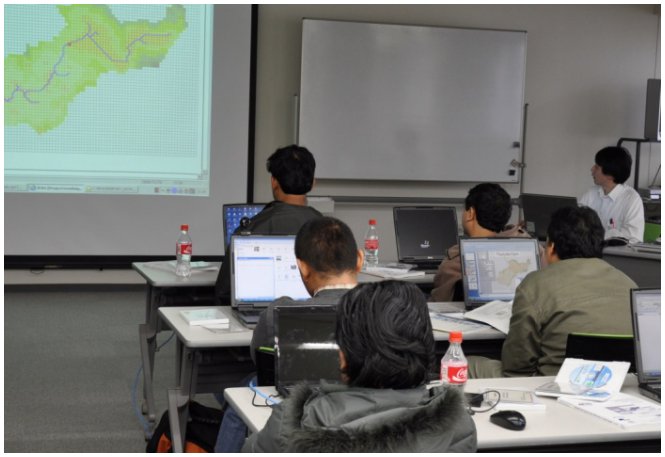
Pham Thanh Hai 准教授（ICHARM 専門研究員）



萬矢敦啓　講師（ICHARM 専門研究員）



馬籠純　准教授（ICHARM 専門研究員）



川上貴宏　交流研究員（ICHARM）



沖大幹　教授（東京大学）



恩田裕一　教授（筑波大学）



吉井厚志　研究調整監（(独）土木研究所）



忌部正博　准教授

（(社）雨水貯留浸透技術協会　常務理事）



湧川勝己　准教授

（(財）国土技術研究センター　次長）



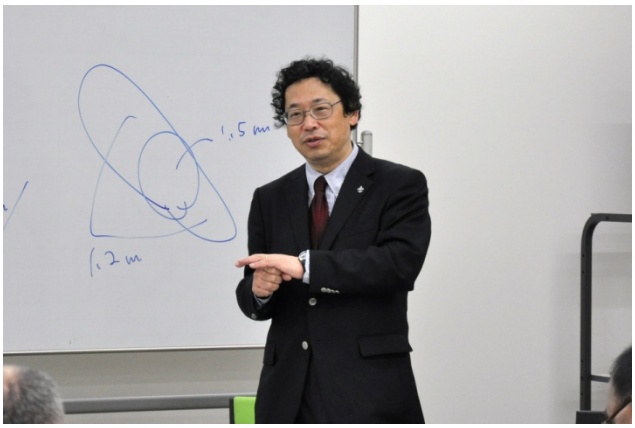
渡邊康玄　教授（北見工業大学）



「洪水ハザードマップを用いた地域防災計画」研修との合同授業の様子



海津正倫　教授（名古屋大学）



林春男　教授（京都大学）



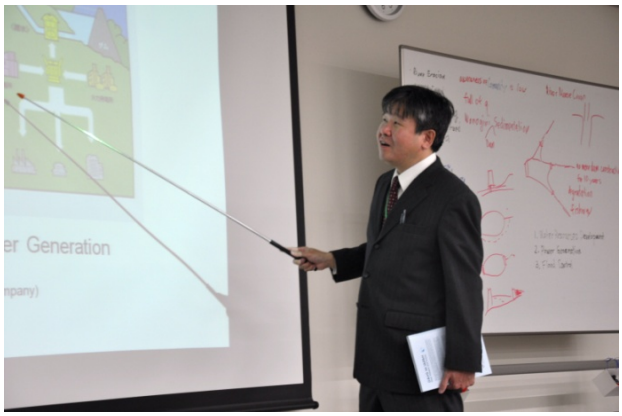
Frank van der Meulen 准教授（UNESCO-IHE）



松本徳久 教授（(財）ダム技術センター　顧問）



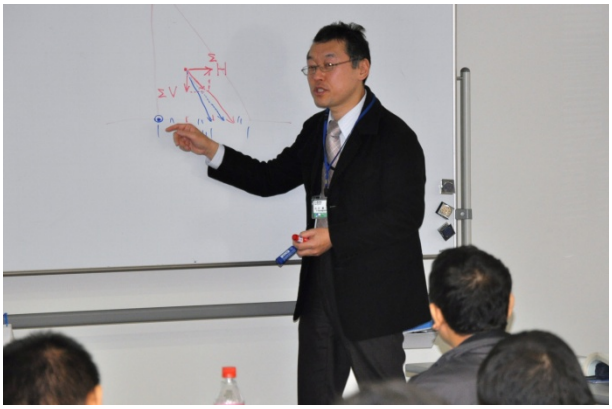
坂本忠彦 理事長（(独）土木研究所）



海野仁 主任研究員（(独）土木研究所）



川崎秀明 教授（山口大学）



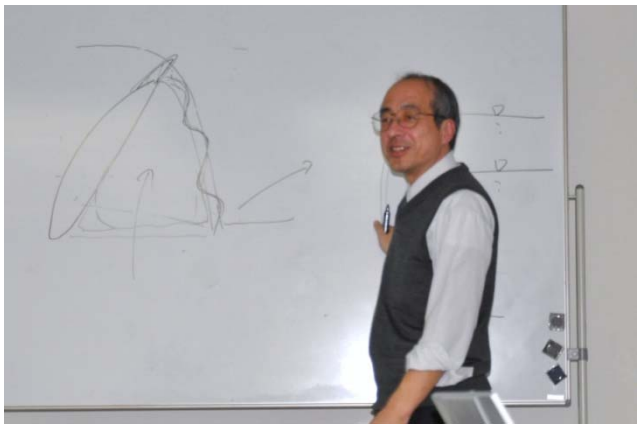
山口嘉一 教授（(独）土木研究所　上席研究員）



角哲也 教授（京都大学）



天野邦彦 室長（国総研）



柏井条介 首席研究員（(財）ダム技術センター）



松本教授と山口教授を講師に迎えた
ダムレポート発表会



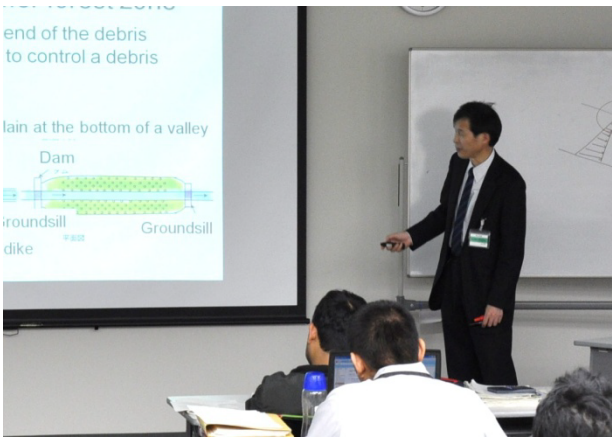
大久保駿 教授（(社）全国治水砂防協会　相談役）



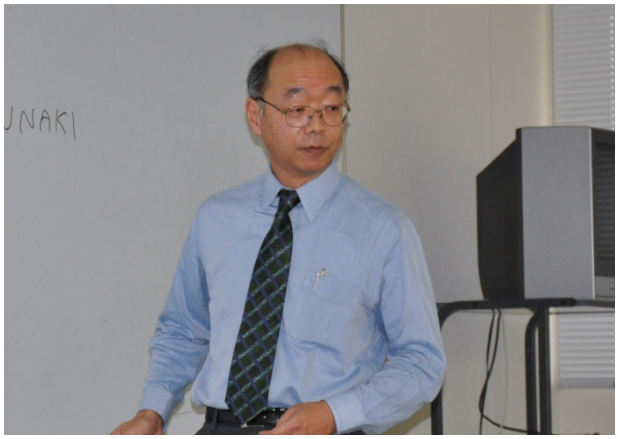
池谷浩 教授（(財）砂防・地すべり技術センター理事長）



高梨和行 講師（アジア航測（株）上席執行役員）



石川芳治 教授（東京農業工業大学）



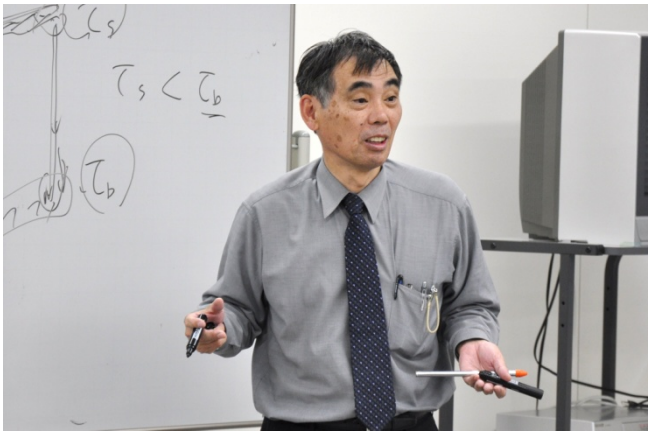
綱木亮介 部長（(財）砂防・地すべり技術センター）



渡邉正幸 所長（(有）国際社会開発協力研究所）



山田孝 助教授（三重大学）



吉松弘之　所長（(株）アイエステー）



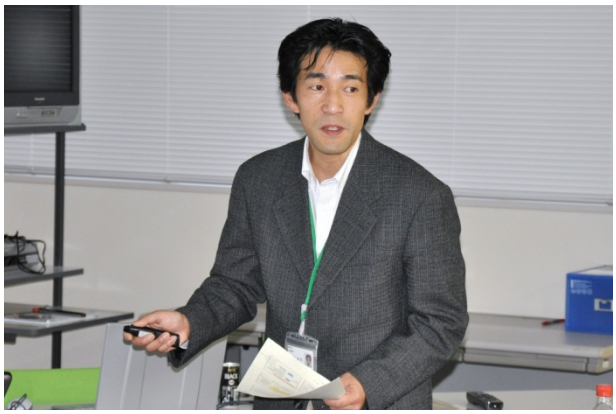
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石井靖雄 上席研究員（(独）土木研究所）



石田孝司 主任研究員（(独）土木研究所）



池谷 教授と原義文 グループ長（(独）土木研究所）
を講師に迎えた砂防レポート発表会

＜演習の様子＞

［Town Watching 演習］













［IFAS 演習］









＜現地視察および行政担当者からの講義＞（役職名は当時のもの）



洪水情報伝達に関する講義

【気象庁予報部】



洪水情報伝達に関する講義

【関東地方整備局河川部　災害対策室】



洪水情報伝達に関する講義

【利根川上流河川事務所 防災対策課】



要援護者対策に関する講義

【三重県危機管理部 地震対策室】



ハザードマップに関する講義

【東京都足立区　計画調整課】



永田純夫　清須市副市長によるご挨拶



ハザードマップに関する講義
【愛知県清須市　防災行政課】



伊勢市役所ホールでの出迎え



鈴木健一　伊勢市長によるご挨拶



洪水情報伝達に関する講義
【三重県伊勢市 危機管理課】



伊勢市円座地区での上田氏による講話



伊勢市大湊地区での金森振興会長による講話



渡良瀬遊水地に関する説明

【関東地方整備局　利根川上流河川事務所】



首都圏外郭放水路調圧水槽内にて

【関東地方整備局　江戸川河川事務所】



江戸川スーパー堤防（座生地区）に関する説明

【関東地方整備局　江戸川河川事務所】



栗橋町（現：久喜市）でのプレ・タウンウォッチング

（まるごとまちごとハザードマップ）



庄内川における事業概要の説明

【中部地方整備局　庄内川河川事務所】



木曽三川公園タワーでの説明

【中部地方整備局　木曽川下流河川事務所】



雲出川の霞堤説明

【中部地方整備局　三重河川国道事務所】



伊勢市大湊地区でのタウンウォッチング前

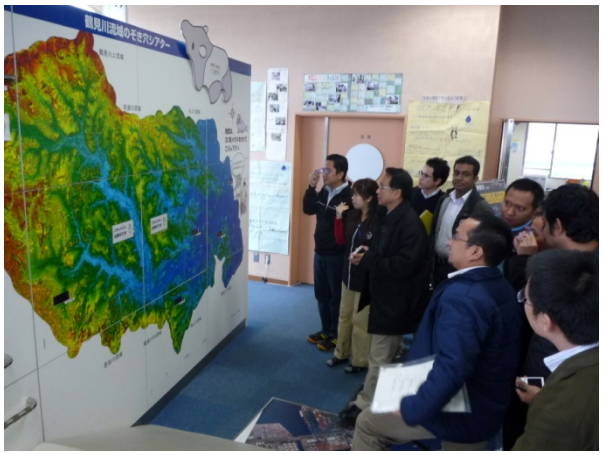
のグループ議論の様子

【大湊コミュニティセンターにて】



小貝川黒子観測所での概要説明

【関東地方整備局　下館河川事務所】



鶴見川流域センターでの流域概要説明

【関東地方整備局　京浜河川事務所】



高橋裕 名誉教授による浸透施設の紹介



大橋川コミュニティセンターにて斐伊川改修事業説明

【中国地方整備局　出雲河川事務所】



尾原ダム建設現場

【中国地方整備局　斐伊川・神戸川総合開発工事事務所】



太田川の概要説明

【中国地方整備局　太田川河川事務所　大芝出張所】



淀川大堰

【近畿地方整備局　淀川河川事務所】



淀川資料館にて概要説明

【近畿地方整備局　淀川河川事務所】



亀の瀬地すべり資料室にて概要説明
【近畿地方整備局　大和川河川事務所】



亀の瀬地すべり対策概要説明
【近畿地方整備局　大和川河川事務所】



天ヶ瀬ダム事業説明　【近畿地方整備局　淀川ダム統合管理事務所　天ヶ瀬ダム管理支所】



天ヶ瀬ダム



瀬田川洗堰の概要説明（水のめぐみ館（アクア琵琶）にて）
【近畿地方整備局　琵琶湖河川事務所】





萬矢講師(ICHARM)の指導の下、利根川中央橋（群馬県渋川市）での ADCP を用いた流量観測演習（4 月 27 日）





「第 59 回利根川水系連合水防演習」（群馬県板倉町）（5 月 15 日）



胆沢ダム学習館にて概要説明

【東北地方整備局　胆沢ダム工事事務所】



一関遊水地の概要説明

【東北地方整備局　岩手河川国道事務所】





過去の台風による洪水実績標

（上：一ノ関駅前、右：「道の駅　かわさき」）





「土地利用一体型水防災事業」の概要説明（左：岩手県藤沢町役場、右：小日形地区）





二線堤の概要説明（左：国土交通省北上川下流河川事務所　鹿島台出張所、右：現地）

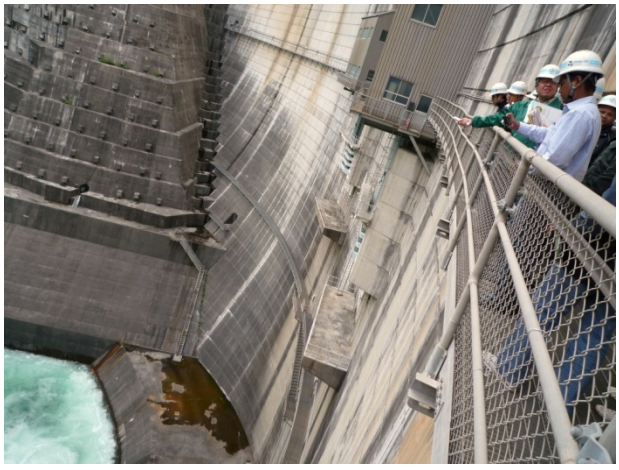




日光砂防事業の概要説明（左：国土交通省日光砂防事務所内、右：大薙山腹工）



五十里ダム・川治ダム連携事業の概要説明
（導水トンネル内）





川治ダム





黒部川における事業概要説明

（左：黒部川現地、右：宇奈月ダム排砂施設）





信濃川における事業概要説明

（左：旧堰と建設中の新可動堰、右：新可動堰建設現場）



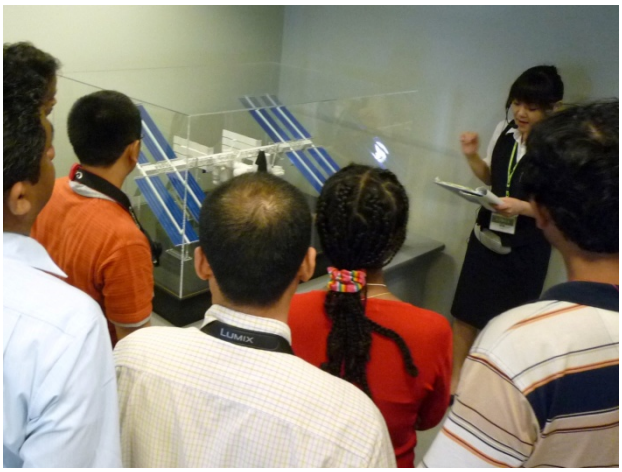
芋川・木篭地区

【北陸地方整備局　湯沢砂防事務所】





大型降雨実験施設紹介（(独）防災科学技術研究所）



人工衛星紹介

（(独）宇宙航空開発機構）

＜Final Presentation＞（2010 年 8 月 6 日）





















6th August Final Presentation

＜水文・水資源学会での Presentation＞（2010 年 9 月 7 日）





発表を行う Somchit 氏（上）と Patha 氏（下）





国際セッションに参加



Photo-25

＜学位授与式（GRIPS）＞（2010 年 9 月 16 日）



政策研究大学院大学内で集合写真


















Photo-27





学部長表彰を受ける Partha 氏

＜Closing Ceremony＞（2010 年 9 月 17 日）



Best Research Award を受賞する Somchit 氏



学生代表挨拶を行う Saifuddin 氏



Photo-28

Chapter 1:　本コースの背景と目的

1.1　本コースの背景

自然災害はどこで起こっても人間の悲劇と経済損失と引き起こし、国の発展を妨げる。特に、発展途上国においては都市化が進行し、貧しい者は自然災害に対してより脆弱な建物と地域に定住するため、発展途上国における自然災害への脆弱さはますます拡大する。

自然災害の中でも特に、洪水やかんばつのような水関連災害は、持続可能な人間社会の発展と貧困軽減のためにも、国際社会が協力して克服されるべき大きな挑戦である。そのような破壊的な災害の数は総計的に増加しているだけでなく、特にアジアやアフリカにおいて急速な人口増加や、都市部における人口と貧困の集中化により、損害と影響の度合いを強めており、また高価値な資産の脆弱性を増加させている（図 1-1）。国連の世界人口推計（「世界都市化予測（2005）」）によれば、世界における都市居住者の数とその割合は今後も増え続け、このような人口増加のほとんどは発展途上国で起きると予測されている。例えば、2000 年から 2030 年の間に、アジアの都市人口は 13 億 6000 万人から 26 億 4000 万人に、アフリカの都市人口は 2 億 9400 万人から 7 億 4200 万人に急増すると見込まれている（図 1-2）。また、今後 10 年間の予測でも、ダッカ（バングラデシュ）、ムンバイ（インド）やジャカルタ（インドネシア）など海に面しているアジアの大都市で人口の急増が予想され、防災施設の整備などの対策が適切に行われない場合、洪水や暴風雨、津波など大規模水災害に対する脆弱性がますます高まるおそれがある（図 1-3）。

また、アジア地域は水関連災害による死者数のうち、世界の 80%以上を占めている（図 1-4）。今後、気候変化により降雨量やその降り方の分布パターンが変化することが予測されており、水関連災害の強度と頻度を悪化させる可能性がある。また、海面は地球温暖化のために世界中で上昇することが予測されており、そして、それは順番に海岸地域、河口のデルタ域と小さな島を危険にさらすことになる。

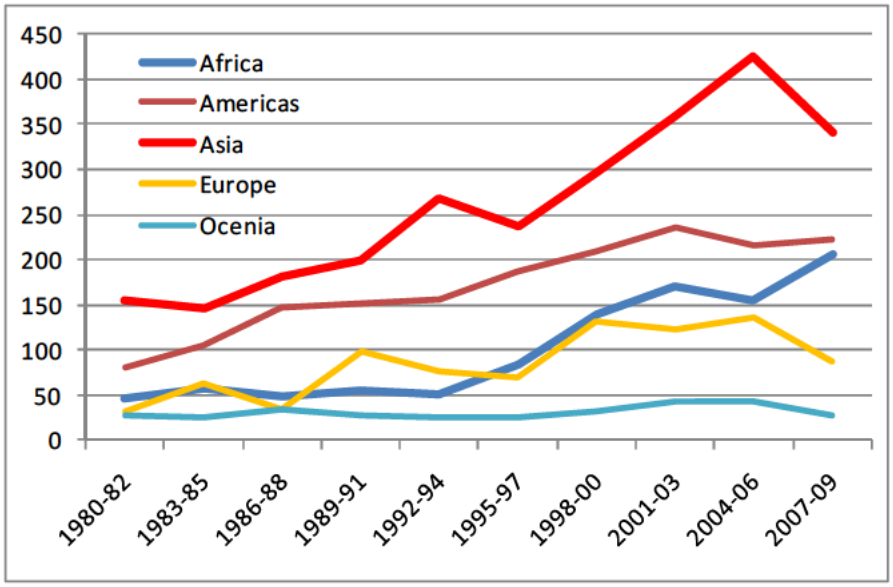


図 1-1　水関連災害数の経年変化（地域別）

（災害疫学センター(CRED)のデータをもとに ICHARM 作成）

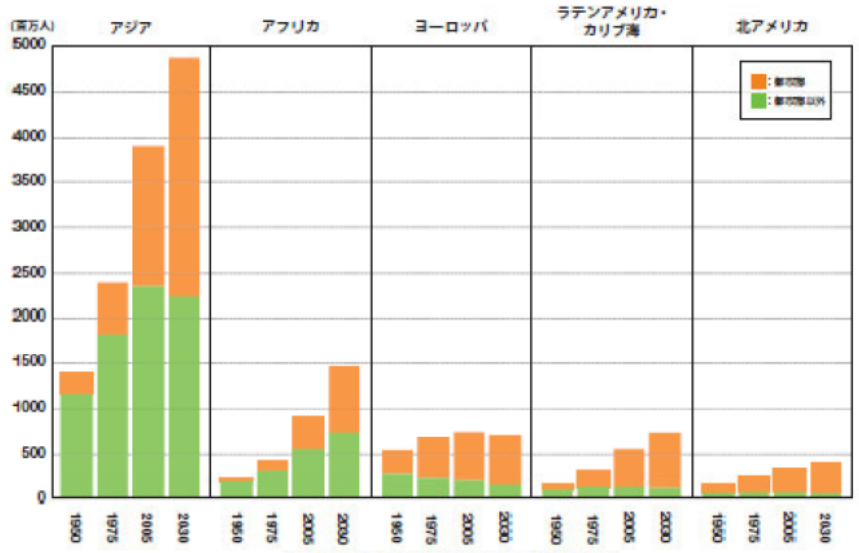


図 1-2　都市部と都市部以外の人口予測（地域別）

（国連の世界人口推計（国連経済社会理事会 人口部「世界都市化予測（2005）」）のデータをもとに ICHARM 作成）

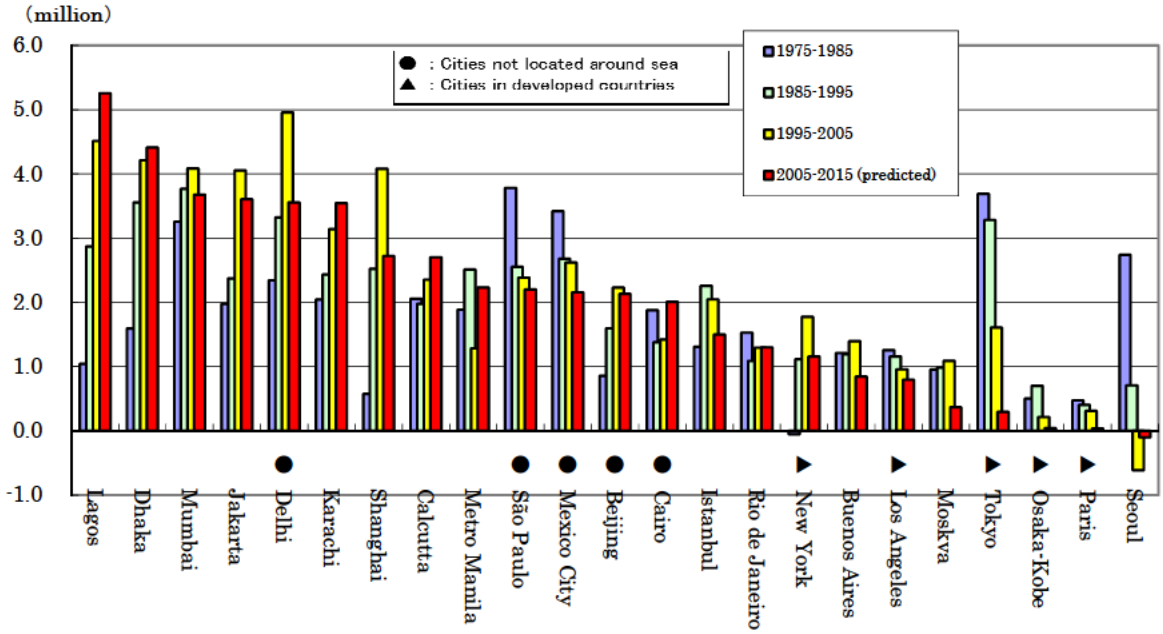


図 1-3　1975 年から 2015 年までの世界大都市における人口増加

（国連の世界人口推計（国連経済社会理事会 人口部「世界都市化予測（2005）」）のデータをもとに ICHARM 作成）

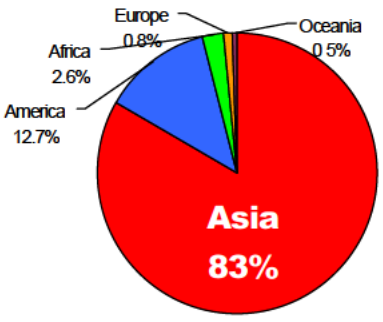


図 1-4

水関連災害による死者数の地域別分布(1980-2006)

（災害疫学センター(CRED)のデータをもとに ICHARM 作成）

このような自然災害の影響を減らすためには、災害の事前・事中・事後のバランスのとれた危機管理が、ダムや堤防などの構造物をもちいた対策、洪水予警報システムやリスクマップ・ハザードマップなどの非構造物対策、社会心理学など多くの専門分野にわたってされなければならない。このため、専門教育とトレーニングによって、適切な災害管理方針と地元の状況を考慮した技術を適切に開発し、コミュニティの防災意識を向上させるために地元の住民と様々な情報交換ができるような、災害管理の専門家を養育する必要がある。

これらの背景のもと、発展途上国において水関連災害に対処できる専門家の能力を向上させるため、ICHARM は、政策研究大学院大学（GRIPS）と（独）国際協力機構（JICA）と協力し、2007 年から修士課程「防災政策プログラム　水災害リスクマネジメントコース」（以下、本コースと表記する）を立ち上げた。本年度は 3 期目のコースとなる。

国際連合は、ユネスコの主導のもとで 2005 年から 2014 年までを「教育と持続可能な開発のための 10 年」と定めている。本コースはまさにその理念に合致するものであり、かつ、ユネスコの後援のもとに設立された ICHARM がこのコースを運営することは、非常に光栄であると考えている。

1.2　本コースの目的

上のような背景のもと、本コースの最終的な到達点および目的は、以下のように設定している。

<Overall Goal>

The overall goal of this training course is to reduce economic/social losses by water-related disasters in developing countries.

（発展途上国における、水関連災害からの経済的・社会的損失を減少させること。）

<Program Objective>

The program objective is to develop the participant's capacity to practically manage the problems and issues concerning water-related disasters in local levels and to contribute for socio-economic and environmental improvements in regional and national levels in developing countries.

（国家レベルから住民のレベルまでのあらゆるレベルにおいて、統合的な河川流域マネジメントの枠組みでの洪水マネジメントの計画と実行に役立つことが出来、確固たる理論と技術に基礎を置く課題解決型実務者を養成すること。）

1.3　本コースから得られるアウトプット

本コースで学習することで、学生は以下のことが出来るようになる。

The participants will become;

(1) knowledgeable about the recent practices in integrated flood risk management in various localities in the

world. （世界各地での統合洪水リスク管理における最近の方法について精通できる。）

(2) able to define the requirements for local/national effective risk reduction including public policies and design a local/national risk management frameworks, institutional coordination and management mechanisms including all stakeholders. （公共政策を含む地方及び国家レベルでの効果的なリスク軽減に必要とされるものを明らかに出来るようになる。また、地方及び国家レベルでのリスク管理体制、組織間の協調及び利害関係者を含む管理の体制について計画できるようになる。）

(3) able to develop local/national indicators to detect and monitor changes in the basis of emergency responses and disaster risk reduction policies and to monitor the status and effectiveness of these policies.（非常時の対応及び災害リスク削減政策における変化を見つけ出し監視するための地方及び国家レベルでの指標を作り出し、これらの政策の状況及び効果を監視できるようになる。）

(4) able to contribute for the implementation of plans developed based on the identified integrated risk management policy by making them underpinned by a clear financial, institutional and legislative framework.（明確な財政的、制度的及び法的枠組みのもとに新たに突き止められた統合リスク管理政策により作成された計画の履行に貢献出来るようになる。）

(5) able to develop risk management strategies considering all the management cycle components, namely emergency response, recovery, mitigation and preparedness taking into account risk perception and communication issues and emerging threats such as global warming and climate change.（リスク感知及び情報伝達問題や地球温暖化・気候変動などの新しい脅威に配慮しながら非常時の対応、復旧、緩和及び準備などの全ての管理構成要素を考慮に入れたリスク管理戦略を開発できるようになる。）

1.4 本コースの特徴

本コースの特徴としては、以下の 4 つを挙げることができる。

I. "Problem Solving-Oriented" course（課題解決型研修）

大規模水災害に対応するためには、職員個人の能力向上も大事であるが、一人で出来ることにはおのずと限界があり、防災組織としての対応能力向上を図ることが必要不可欠である。

近年 JICA 研修は、組織としての対応能力向上を目的とした『課題解決型研修』に軸足が移されている。これは、学生が自国における水災害に関する課題をまず特定・認識した上で、その課題を解決するために自ら主体的に学習すれば、個人としての効率的な学習効果が得られるとともに、所属する組織にとっても、課題解決のために有効な結果が得られると思われるからである。

このような考えから、本コースは「押しつけの研修」ではなく、「自ら考え、課題を解決する研修」を目指している。本コースの修士論文では、学生が自ら自国の課題解決に関わるテーマを研究することにしていることから、総合的な水災害被害軽減の総合的計画立案が可能な人材育成が図られ、帰国後の自国での課題解決促進にも役立つことが期待される。

II. "Students from the same organization"（同一組織から複数の学生）

本コースは、3 か年のうち 3 回の修士コースを実施するプロジェクトの一環であるが、前述のよう

に防災組織としての対応能力向上を図るため、同一組織からなるべく複数の学生がこのプロジェクトで学ぶよう配慮している。そのため、対象国の関連組織に対し、優秀な学生を派遣して頂けるよう直接働きかけも行っている。

III. "Practical" rather than "Theoretical" （理論よりも実務）

上記のように課題解決型の研修としているため、基礎理論よりも実務での応用が出来るような実践的な講義・演習ならびに現地視察を行っている。

IV. 1 year master's course （1年で修士号が取得できる）

本コースは、現在行政機関で働いている現職の職員を対象としているものであるため、業務に出来るだけ支障を来さないように、通常2年で取得する修士号を1年で取得できるよう構成されている。

1.5 本コースへの参加資格

本コースへの参加方法は、JICA の海外現地事務所を通じて募集・選考された JICA 研修「洪水関連災害専門家育成」の研修生が、GRIPS の学生として参加する場合と、GRIPS へ直接応募し選考されて参加する場合の2種類がある。前者には学生の出身国に制限があるが、後者には制限はない。

1.5.1 JICA 研修生として応募する場合

JICA 研修生としての応募者の候補国、対象機関、予定学生数、参加資格は以下の通りであった。

Candidate Countries（対象国）:

9 countries (Bangladesh, China, Ethiopia, India, Indonesia, Nepal, Philippines, Sri Lanka, and Thailand)

Eligible/Target Organization（対象機関）:

Technical officials, engineers or researchers in the field of river management or water-related Disasters（河川管理か水関連災害の分野における技師・技術者・研究者）

Total Number of Students（学生数）:

10students (The number of participants from China will be Two (2)).

Nominee Qualifications（応募資格）:

Applicants should;

(1) be nominated by their governments in accordance.
(2) be engineers or technical officers who have three (3) or more year of experience in the field of flood management.
(3) be university graduates in civil engineering, water resource management, or disaster mitigation, etc. or have an equivalent academic background.
(4) have working knowledge of civil engineering, especially of hydraulics and hydrology.
(5) be familiar with mathematics such as differentiation and integration techniques.
(6) be able to write research reports on the individual study in English.
(7) be proficient in MS Word, Excel and Power Point.

(8) have a competent command of spoken and written English which is equal to TOEFL CBT 173 or more.
(9) must be in good health, both physically and mentally, to participate in the Program in Japan.
(10) be over twenty-two (22) and under forty (40) years of age.
(11) not be serving any form of military service.

1.5.2 GRIPSへ直接応募する場合

GRIPSに直接応募する場合の、応募者資格は以下の通りであった。

To be eligible for admission to this master's program, an applicant
1) must hold a bachelor's degree or its equivalent from a recognized/accredited university of the highest standard in the field of civil engineering, water resource management, or disaster mitigation.
2) must have working knowledge of civil engineering, especially of hydraulics and hydrology.
3) must be familiar with mathematics such as differentiation and integration techniques.
4) must satisfy the English language requirements with a minimum TOEFL score of 550 (Computer-Based Test (CBT) 213, Internet-Based Test (iBT) 79), IELTS 6.0 or its equivalent.
5) must be in good health.

1.5.3 最終決定参加学生

1.5.1、1.5.2での募集の結果、合計13名が合格となった。学生名簿を参考資料1-1に示す。なお、スリランカから来日したBOGAHAPITIYA GAMAGE Samantha Kumara氏は、家庭の事情により研修途中（2009年12月）でやむなく帰国となった。

1.6 本コースの指導体制

本コースにおける指導体制は以下の通りである。

（独）土木研究所 水災害・リスクマネジメント国際センター（ICHARM）

センター長	竹内 邦良
研究・研修指導監	Jayawardena Amithirigala
グループ長	田中 茂信
上席研究員	工藤 啓
研究員	佐山 敬洋

その他、学生の研究テーマに応じて、当該分野の専門であるICHARM研究員が適宜指導を行った。

なお、各種事務調整等の庶務事項はICHARM 国際普及チームが担当した。

Chapter 2:　本コースの内容

2.1　コーススケジュール

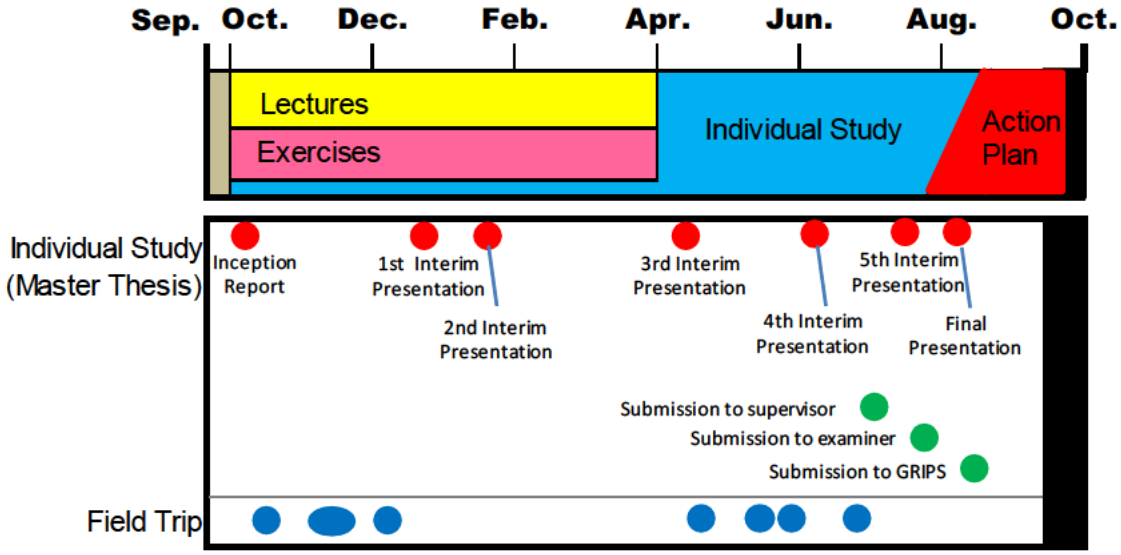


図 2-1　コース全体スケジュール概念図

本コースの期間は、2009 年 9 月 28 日（来日日）から 2010 年 9 月 18 日（離日日）までの約 1 年間である。GRIPS での入学式は 2009 年 10 月 5 日、修了式は 2010 年 9 月 16 日である。

本コースの全体スケジュールの概念図を図 2-1 に示す。

コース前半では主に「Lectures（講義）」（11 科目）及び「Exercises（演習）」（8 科目）を実施する。さらに講義の理解を深めるために、1 年間を通じて数回「Field Trip（現地視察）」を行う。また、ICHARM が専門家を招いて適宜実施する“ICHARM R&D Seminar”に学生を参加させて、水関連災害に関する最新の知識や動向に触れる機会を与える。

コース後半では主に、ICHARM の指導教官と相談しつつ「Individual Study（個人研究）」を行い、修士論文を作成する。1～2 ヶ月に 1 回程度、修士論文の進捗を確認するために、一人あたり 10 分程度で各学生が発表を行う「Interim Presentation」を実施し、他の学生や指導教官から適宜アドバイスを受ける。修士論文提出、JICA 募集枠の学生は、帰国後の活動内容についての「Action Plan（アクションプラン）」作成に取りかかる。

さらに、毎月 1 回程度は ICHARM センター長を含めた Homeroom を開催し、日常の生活についての改善点や講義/演習についての意見、修士論文の進め方等に関して意見を聞く機会を設けるようにする。

本コースの主な年間スケジュールを表 2-1 に示す。講義は「国連防災の日」を含む 2009 年 10 月の第 2 週から開始された。また、本コース全体の詳細日程表は、参考資料 2-1 に示す。

表 2-1　主な年間スケジュール

Date			Event
2009	September	28th	Arrival in Japan
	October	5th	Entrance Ceremony at GRIPS
		6th - 7th	Presentation on Inception Report
		8th	Opening Ceremony at ICHARM
		15th	Field trip (1) to the Kanto Region
		21st – 23rd	Project Cycle Management Practice
		27th	PWRI Laboratory Tour
	November	6th	Homeroom
		10th – 26th	Joint classes with the "Local Emergency Operation Plan with Flood Hazard Map" training course
		12th	Field trip (2) to Kurihashi Town ("Town Watching" exercise)
		16th – 18th	Field trip (3) to Chubu Region and "Town Watching" exercise in Ise City
		20th	Field trip (4) to Kokai River Hydrological observatory
	December	3rd	Field trip (5) to the Kanto Region (Tsurumi river retarding basin etc.)
		10th	ICHARM Quick Report symposium
		22nd	1st Interim Presentation of Master Thesis
2010	January	21st	2nd Interim Presentation of Master Thesis
		25th -5th	Lectures at GRIPS
	March	1st	24th ICHARM R&D seminar by Prof. Kengo Sunada (Yamanashi University)
		12th	25th ICHARM R&D seminar by Prof. Ganesh P. SHIVAKOTI (University of Tokyo)
		25th	Homeroom
	April	2nd	Cherry blossom viewing and tea ceremony at PWRI
			26th ICHARM R&D seminar by Prof. Tadashi Yamada(Chuo University)
		9th	3rd Interim Presentation of Master Thesis
		20th – 23rd	Field trip (6) to Chugoku & Kinki Region
	May	15th	Field trip (7) to the 59th Tone River Flood Fighting Drill in Itakura Town
		25th	27th ICHARM R&D seminar
		26th – 28th	Field trip (8) to Touhoku & Kanto Region
	June	3rd	4th Interim Presentation of Master Thesis, Homeroom
		17th – 18th	Field trip (9) to Hokuriku Region
	July	2nd	Deadline of submission of the 1st draft thesis
		16th	5th Interim Presentation of Master Thesis
	August	6th	Final Presentation of Master Thesis
		23rd	Submission of Master Thesis to GRIPS
	September	3rd	28th ICHARM R&D seminar
		7th – 8th	"Japan Society of Hydrology and Water Resources" at Hosei Univ.
		10th	29th ICHARM R&D seminar
		15th	Presentation of Action Plan, Farewell Party at ICHARM
		16th	Graduation Ceremony at GRIPS
		17th	Closing Ceremony at JICA
		18th	Departure from Japan

2.2　コースカリキュラム

2.2.1　講義・演習

本コースは、実務への応用を重視する課題解決型コースであるため、水災害リスクマネジメントに関する基礎学習だけではなく、応用学習や演習を多く取り入れているのが特徴である。

本コースの履修科目一覧表は表 2-2 の通りである。計 20 科目で構成されており、3 つのカテゴリー（I: Required Course（必修科目）, II: Recommended Course（選択必修科目）, III Elective Course（選択科目）に分類されている。基本的に、主に講義から構成される科目は Recommended Course に、演習から構成される科目は Elective Course としている。

各科目は 15 コマから構成されており、Recommended Course（選択必修科目）は全て必修（2 単位）、Elective Course（選択科目）は全て選択（1 単位）、そして Individual Study（個人学習）は 10 単位である。修士号取得のためには、最低 30 単位を取得せねばならず、かつそのうち 16 単位は Recommended Course（選択必修科目）から取得しなければならない。その上で論文審査に合格すれば、「防災政策」の修士号が取得できる。なお、単位上は必ずしも全ての科目を受講する取得する必要はないが、本コースの学生は全ての科目を受講している。各科目の内容は、1.3 で挙げた本コースアウトプットには表 2-3 のように対応する。参考資料 2-2 に各科目のカリキュラム一覧表を、参考資料 2-3 に GRIPS のホームページ上でも公開される各科目のシラバスをそれぞれ示す。

2.2.2　講師

各科目の講師には、ICHARM 研究員だけではなく、土研・国総研及び大学からも多くの講師を招き、学生が最新の情報を学習できるよう努める。講師数は内部講師・外部講師含めて約 65 名程度となった。参考資料 2-4 に講師一覧表を示す。

なお、本コースの講義・演習・個人研究の実施にあたっては、表 2-4 に挙げる ICHARM スタッフおよび外部講師の方々を GRIPS の連携教官として委嘱し、各種指導を仰ぐこととしている。

2.2.3　現地視察および防災行政担当者からの講義

本コースでは、日本の洪水対策について現地の状況を見聞しながらより深く学ぶため、ICHARM における講義・演習の他に、遊水地や放水路、ダムや地滑り対策など、日帰り旅行含めて計 9 回の現地視察を実施する。併せて、国土交通省地方事務所や地方自治体に赴き、実際に住民とのやりとりの最前線に立つ防災行政担当者から、日本の洪水情報伝達システムや洪水ハザードマップに関して講義を頂き、日本の防災行政における現場での課題などについて理解を深める。参考資料 2-5 に視察箇所一覧を示す。

現地視察先は、講義で紹介された洪水対策施設や我が国における代表的な洪水対策施設を出来る限り自分の目で確かめられるよう配慮して選定した。また、淀川及び黒部川を上流から下流まで見学するなど、流域を意識した観点で行程を構成した。見学後には学生にレポート提出を課し、ただの物見遊山にとどまらず各学生の理解を深めさせるよう配慮する。参考資料 2-6 に計 9 回の各現地視察の行程表を、参考資料 2-7 に学生に課した各レポートの課題内容を示す。

表 2-2　履修科目一覧表

Category	Course No.	Course Title	Instructor	Term	Credit	
I. Required Courses	DMP480E	Individual Study		Winter through Summer	10	
II. Recommended Courses	DMP200E	Disaster Mitigation Policy	Morichi	Winter	2	
	DMP201E	Disaster Risk Management	Okazaki	Winter	2	
	DMP280E	Basic Hydrology	Jayawardena	Fall through Winter	2	
	DMP281E	Hydraulics	Ishikawa	Fall through Winter	2	
	DMP282E	Basic Concepts of Integrated Flood Risk Management(IFRM)	Takeuchi	Fall through Winter	2	
	DMP283E	Local Disaster Management and Hazard Mapping	Tanaka	Fall through Winter	2	
	DMP380E	Advanced Hydrology	Jayawardena	Fall through Winter	2	
	DMP381E	Flood Hydraulics and Sediment Transport	Fukuoka	Fall through Winter	2	
	DMP382E	Mechanics of Sediment Transportation and Channel Changes	Egashira	Fall through Winter	2	
	DMP383E	Sustainable Reservoir Development & Management	Matsumoto	Fall through Winter	2	16
	DMP384E	Control Measures for Landslide & Debris Flow	Okubo	Fall through Winter	2	
III. Elective Courses	DMP180E	Computer Programming	Tanaka	Fall through Winter	1	
	DMP284E	Practice on Hydraulics	Ishikawa	Fall through Spring	1	
	DMP285E	Practice on Inundation Analysis	Tanaka	Fall through Spring	1	
	DMP286E	Practice on Local Disaster Management Plan	Tanaka	Fall through Spring	1	
	DMP385E	Practice on Advanced Hydrology	Jayawardena	Fall through Spring	1	
	DMP386E	Practice on Flood Forecasting	Fukami	Fall through Spring	1	
	DMP387E	Practice on Sustainable Reservoir Development & Management	Matsumoto	Fall through Spring	1	
	DMP388E	Practice on Control Measures for Landslide & Debris Flow	Okubo	Fall through Spring	1	

表 2-3　各アウトプットへ貢献する科目

本コースのアウトプット	貢献する科目
1)　世界各地での統合洪水リスク管理における最近の方法について精通すること。	○ Basic Concepts of Integrated Flood Risk management (IFRM)
2)　公共政策を含む地方及び国家レベルでの効果的なリスク軽減に必要とされるものを明らかに出来るようになること。また、地方及び国家レベルでのリスク管理体制、組織間の協調及び利害関係者を含む管理の体制について計画できるようになること。	○ Disaster Management Policy ○ Disaster Risk Management ○ Local Disaster Management and Hazard Mapping ○ Practice on Local Disaster Management Plan
3)　非常時の対応及び災害リスク軽減政策における変化を見つけ出し監視するための地方及び国家レベルでの指標を作り出し、これらの政策の状況及び効果を監視できるようになること。	○ Computer Programming ○ Basic Hydrology ○ Hydraulics ○ Practice on Hydraulics ○ Advanced Hydrology ○ Flood Hydraulics and Sediment Transport ○ Mechanics of Sediment Transportation and River Changes ○ Practice on Advanced Hydrology ○ Practice on Inundation Analysis ○ Sustainable Reservoir Development & Management ○ Practice on Sustainable Reservoir Development & Management ○ Control Measures for Landslide & Debris Flow ○ Practice on Control Measures for Landslide & Debris Flow
4)　明確な財政的、制度的及び法的枠組みのもとに新たに突き止められた統合リスク管理政策により作成された計画の履行に貢献出来るようになること。	○ Individual Study
5)　リスク感知及び情報伝達問題や地球温暖化・気候変動などの新しい脅威に配慮しながら非常時の対応、復旧、緩和及び準備などの全ての管理構成要素を考慮に入れたリスク管理戦略を開発できるようになること。	○ (Basic Concepts of Integrated Flood Risk management (IFRM)) ○ (Local Disaster Management and Hazard Mapping)

表 2-4　GRIPS 連携教官一覧

職名	氏名	本職名（講義当時のもの）
連携教授	竹内　邦良	（独）土木研究所　ICHARM　センター長
連携教授	田中　茂信	（独）土木研究所　ICHARM　グループ長
連携教授	山口　嘉一	（独）土木研究所　水工研究ｸﾞﾙｰﾌﾟ　上席研究員
連携教授	Amithirigala JAYAWARDENA	（独）土木研究所　ICHARM　研究・研修指導監
連携特任教授	工藤　啓	（独）土木研究所　ICHARM　上席研究員
連携准教授	深見　和彦	（独）土木研究所　ICHARM　上席研究員
連携准教授	三宅　且仁	（独）土木研究所　ICHARM　上席研究員
連携准教授	今村　能之	（独）土木研究所　ICHARM　上席研究員
連携准教授	Osti Rabindra	（独）土木研究所　ICHARM　主任研究員
連携准教授	Pham Thanh Hai	（独）土木研究所　ICHARM　専門研究員
連携准教授	馬籠　純	（独）土木研究所　ICHARM　専門研究員
連携准教授	佐山　敬洋	（独）土木研究所　ICHARM　研究員
非常勤講師	ADIKARI Yoganath	（独）土木研究所　ICHARM　専門研究員
非常勤講師	CHAVOSHIAN Seyed Ali	（独）土木研究所　ICHARM　専門研究員
非常勤講師	Dinar Catur Istiyanto	（独）土木研究所　ICHARM　専門研究員
非常勤講師	Rajapakse Hemantha	（独）土木研究所　ICHARM　専門研究員
非常勤講師	萬矢　敦啓	（独）土木研究所　ICHARM　専門研究員
非常勤講師	猪股　広典	（独）土木研究所　ICHARM　研究員
非常勤講師	宮本　守	（独）土木研究所　ICHARM　専門研究員
客員教授	池谷　浩	（財）砂防・地すべり技術センター　理事長
客員教授	石川　忠晴	東京工業大学大学院総合理工学研究科　教授
客員教授	大久保　駿	（社）全国治水砂防協会　相談役
客員教授	江頭　進治	（株）ニュージェック　技師長
客員教授	福岡　捷二	中央大学　研究開発機構教授
客員教授	渡邊　康玄	北見工業大学工学部社会環境工学科　教授
客員教授	松本　徳久	（財）ダム技術センター　顧問
客員教授	川崎　秀明	山口大学大学院 理工学研究科 教授
客員教授	角　哲也	京都大学防災研究所水資源環境研究センター　教授
客員准教授	湧川　勝己	（財）国土技術研究センター　調査第一部　次長
客員准教授	忌部　正博	（社）雨水貯留浸透技術協会　常務理事
非常勤講師	高梨　和行	アジア航測株式会社経営管理本部　上席執行役員

2.2.4　学習・生活環境

本コースにおける授業時間は、通常の大学等と同等の 1 コマ 90 分とし、1 日の時間割は表 2-5 の通りである。JICA 募集枠で入学した学生は、JICA 筑波（茨城県牛久市高野台）に滞在し、JICA が所有しているバスにて毎日通学する。

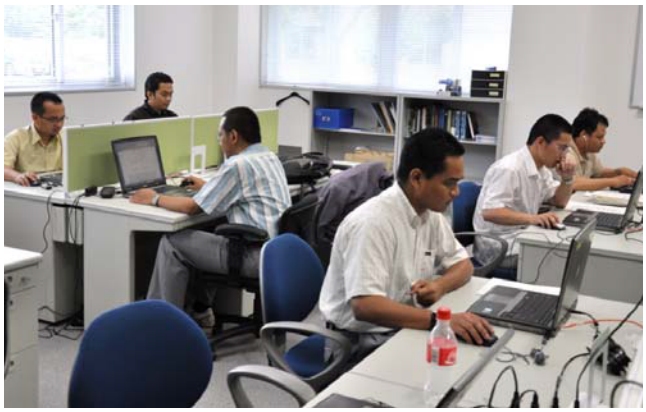
表 2-5　1 日の時間割

1st period	9:00-10:30
2nd period	10:45-12:15
3rd period	13:15-14:45
4th period	15:00-16:30

また、昨年度と同様に、コース前半の 10 月から 3 月までは日替わりの日直制度を設けて、欠席者確認や講義終了後のホワイトボード消し、戸締まり・消灯の確認などを行わせ、1 日の結果を簡単に「日直シート」（A4　1 枚）にまとめさせる。個人研究が中心となるコース後半の 4 月から 9 月については、週替わりで欠席者の確認やその週のまとめなどを報告させる。参考資料 2-8 に日直シートを示す。

学習・生活環境に関して、今年度に行った主な改善事項は以下の通りである。

- 2009 年 11 月には、かねてから工事中であった新学生部屋が完成し、良好な学習環境のもとで、講義時間外は各自割り当てられた机でレポート作成や修士論文に専念させることができた。
- 研究に必要となる資料や論文にアクセスできる機会を与えるために、国総研図書館においてオンラインジャーナル（エルゼビア）の検索方法や、筑波大学に赴いて図書検索システムの紹介を行った。
- ムスリム（イスラム教信仰者）が毎週金曜日に土研外のモスクへ行く利便を図るために、学生が自由に使用できる自転車を 1 台、土木研究所業務課から譲り受けた。
- 学生が自由に使えるように、ICHARM からコーヒーメーカーを 1 台提供した。
- 学生含む本コース関係者が資料やスケジュール、連絡事項などを共有する場として、Google ソフトを用いて”Master’s Course Intra”を開設し、学生や関係者が ICHARM 外からでもスケジュールや連絡事項を確認出来るようにした。図 2-2 に表示画面例を示す。



新学生部屋
（以前とは違い、窓や会議用テーブルがある）



昼食用テーブル

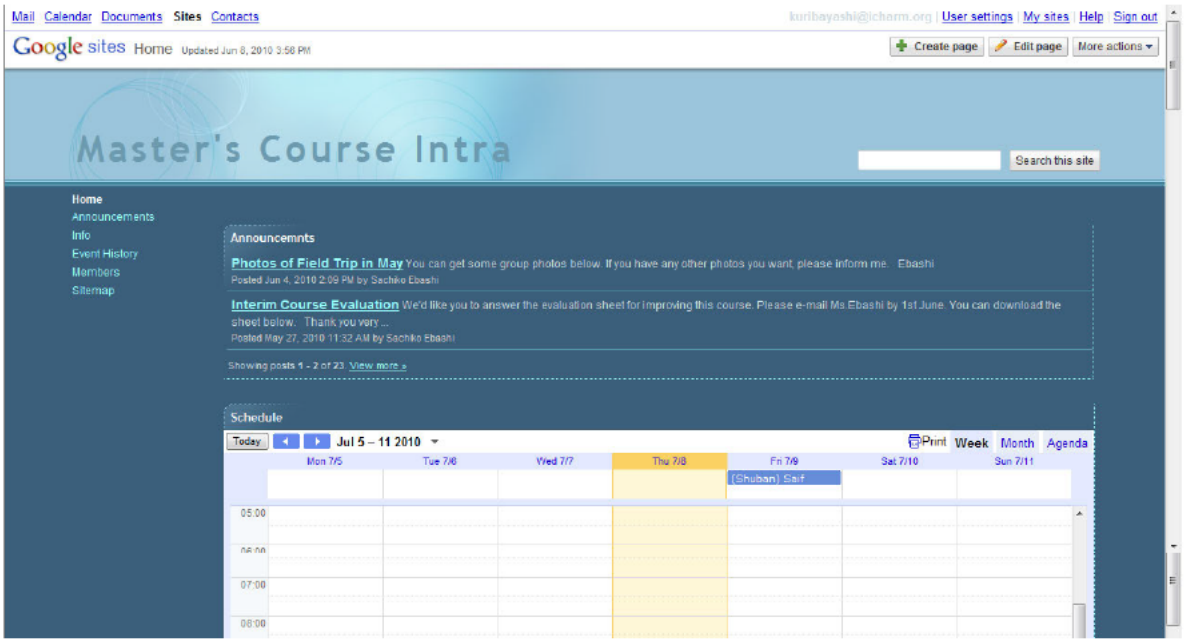


図 2-2　“Master's Course Intra” 表示画面例

2.3　修士論文

本コースは前述の通り、「押しつけの研修」ではなく、「自ら考え、課題を解決する研修」を目指した”Problem Solving-Oriented” course （課題解決型研修）を特徴の一つとしている。これに基づき、本コースの修士論文では、学生が自ら自国の課題解決に関わるテーマを研究することにしており、その結果として、総合的な水災害被害軽減の総合的計画立案が可能な人材育成が図られ、帰国後の自国での課題解決促進にも役立つことが期待される。

そのため、まず本コース開始早々に、自国が抱える水災害に関する課題や修士論文の対象予定とするターゲットエリアに関する情報、プロジェクト履行に関する必要な行動について各学生から紹介させる場として“Inception Report”発表会を開催する。その後、今年度は昨年度より 1 ヶ月ほどスケジュールを早め、2009 年 11 月には ICHARM 指導教官と学生が、取り組みたいテーマについて話し合いを行い、講義・演習がほぼ終了した 2010 年 3 月下旬から本格的に各自の研究テーマに取り組ませる。論文提出締め切りは 2010 年 8 月 23 日であり、その後 GRIPS 内で合否審査会が実施され、修士号が授与されるか判断が行われる。

2.4　卒業アルバム

これまで各年度、講義や演習、現地視察などの写真を収めた卒業アルバムを ICHARM で作成し、JICA 閉講式の場で学生に配布していたが、今年度は学生のアイデアを活かすべく、学生にページ構成や写真のレイアウトを考えさせるようにし、“自ら作成した”アルバムという意識を持たせるようにする。JICA 閉講式の場で渡すのは前年度と同様である。

Chapter 3: 2009-2010 年度活動報告



政策研究大学院大学構内で集合写真（2010 年 9 月 16 日）

（前列左 3 人目から Jayawardena 教授（ICHARM）、森地教授（GRIPS）、岡崎教授（GRIPS）、竹内教授（ICHARM）、田中教授（ICHARM））

（本報告書冒頭にまとめて写真を掲載しているので参考のこと）

ICHARM は、2009 年 9 月 28 日から 2010 年 9 月 18 日まで約 1 年間、（独）国際協力機構（JICA）および政策研究大学大学院大学（GRIPS）と連携し、修士課程『防災政策プログラム　水災害リスクマネジメントコース』（JICA 研修名「洪水関連災害防災専門家育成」）を実施した。

本コースの特徴としては、1 年で修士号を取得できること、学生が自国で実際に抱えている問題の解決策を提案できる能力を向上させる『課題解決型』の研修であること、及び『理論より実務』を重視する研修であることなどが挙げられる。

当初 13 名の学生でスタートしたが、スリランカから来日した BOGAHAPITIYA GAMAGE Samantha Kumara 氏は、家庭の事情により研修途中（2009 年 12 月）でやむなく帰国したため、最終的には、学生 12 人（中国 1 名、バングラデシュ 2 名、インドネシア 3 名、エチオピア 1 名、ミャンマー1 名、日本 1 名、スリランカ 1 名、タイ 1 名、フィリピン 1 名）が無事に審査に合格して『修士（防災政策）』の学位を取得し、本国へ帰国した。

2009 年 10 月 8 日に土木研究所幹部（理事長・理事・研究調整監・総務部長・企画部長）、ICHARM 関係者（竹内教授、Jayawardena 教授、田中教授、工藤教授）および JICA 筑波関係者（佐藤所長、下谷職員、佐久間職員、末次研修監理員）臨席のもと、土木研究所 2 階特別会議室で行った開講式では、学生を代表して Jerry Austria Fano 氏（フィリピン）がこのコースへの抱負を述べ、本コースはスタートした。

本コースの期間は約 1 年間であるが、コース前半では水災害に関係する講義・演習を集中的に実施し、コース後半は個人研究に対する時間を多く充てた。また、国内の洪水対策に関する現場での知識を学ぶために、適宜現地視察を実施した。

本コースには、ICHARM の研究員だけでなく、水災害各分野の最先端の研究を行っている研究者として、土木研究所・国土技術政策総合研究所からだけでなく、国内の各大学等からも講師を招いて、講義を頂いた。

＜講義と演習＞

まず 10 月から 1 月にかけては、洪水災害管理に関する基本的な概念を学ばせるために、竹内邦良 教授（ICHARM）、沖大幹 教授（東京大学）、恩田裕一 教授（筑波大学）、湧川勝己 准教授（(財) 国土技術研究センター）、吉井厚志 研究調整監（寒地土木研究所）らによる「Basic Concepts of Integrated Flood Risk management (IFRM)」の講義を行った。

平行して、洪水流や土砂輸送に関する基礎原理を学ばせるために、福岡捷二 教授（中央大学）と渡邊康玄 教授（北見工業大学）による「Flood Hydraulics and Sediment Transport」の講義を行い、次いで今年度から新たに設けた江頭進治 教授（(株) ニュージェック）による「Mechanics of Sediment Transportation and River Changes」の講義、石川忠晴 教授（東京工業大学）と萬矢敦啓 講師（ICHARM 専門研究員）による「Hydraulics」の講義・演習を実施した。

Jayawardena Amithirigala 教授（ICHARM）による「Basic Hydrology」「Advanced Hydrology」の講義・演習は、10 月から 3 月上旬にかけて実施し、洪水対策の基礎的データとなる各種水文データの扱いについて、質量ともにかなりの内容を学習させた。

演習については、ICHARM 研究員が主体となって実施した。前述の「Hydraulics」演習の他に、フォートランなどによる数値解法を学ぶ「Computer Programming」（ハイ准教授とラジャパクセ講師（ともに ICHARM 専門研究員）や GIS ソフトや氾濫解析ソフトの使い方を学ぶ「Practice on Inundation Analysis」（オスティ准教授（ICHARM 主任研究員）と馬籠純准教授（ICHARM 専門研究員））を行い、また今年度から新たに設けた演習として、ICHARM で開発・普及を行っている IFAS に関する演習「Practice on Flood Forecasting」（深見和彦 准教授、杉浦友宣 主任研究員、小澤剛 交流研究員、川上貴宏 交流研究員）を集中的に実施した。

「Local Disaster Management and Hazard Mapping」の講義・演習については、11 月の約 1 ヶ月間、他の JICA 研修「洪水ハザードマップを用いた地域防災計画」と合同で行った。生徒数は両コース合わせてバングラデシュ 3 名・パキスタン 1 名・中国 1 名・エチオピア 1 名・インドネシア 5 名・ラオス 1 名・ミャンマー2 名・ブータン 1 名・フィリピン 1 名・タイ 2 名・スリランカ 3 名・タジキスタン 1 名・日本 1 名の 13 ヶ国から、合計 23 人にもなり、これほど多くの国籍の学生が一堂に会して授業や演習を行うことは、両コースの学生にとって大いに刺激になったと思われる。

本科目では、我が国の防災システムや河川情報システムに関して田中茂信 教授や工藤啓 教授（いずれ

も ICHARM)、外来講師として災害心理学に関して林春男 教授（京都大学）や、地形学に関して海津正倫 教授（名古屋大学）による講義をそれぞれ行った。さらに、研修における交換講師の協定を ICHARM と結んでいる UNESCO-IHE から Frank van der Meulen 准教授を招へいし、気候変動による低平国土への影響に関する特別講義を行った。

また本科目では、気象庁、国土交通省関東地方整備局河川部や利根川上流河川事務所、三重県防災危機管理部、三重県伊勢市、東京都足立区や愛知県清須市を訪問し、住民との関わりが深い防災担当者から、住民への洪水情報伝達の仕組みに関する講義、洪水ハザードマップに関する講義を数多く実施した。伊勢市訪問の際には、市役所ホールにて職員の皆さんによる拍手でのお出迎えを受け、さらに市長によるご挨拶も頂いた。さらに、我が国における具体的な地域防災活動の実態を知るために、伊勢市円座地区と大湊地区でそれぞれコミュニティリーダーへのヒアリングを行い、防災の基本となる自助・共助の重要性について学習することが出来た。大湊地区においては、タウンウォッチングも実施した。

1 月下旬の 2 週間は、GRIPS（東京都港区六本木）において「Disaster Mitigation Policy」、「Disaster Risk Management」各講義を集中的に実施し、森地茂 教授（GRIPS）や岡崎健二 教授（GRIPS）から講義を頂いた。また、内閣府における特別講義や、名古屋・京都の現地視察も行った。

2 月から 3 月にかけては、我が国におけるより応用的な洪水対策として、「Sustainable Reservoir Development & Management」と「Control Measures for Landslide & Debris Flow」の各講義・演習を集中的に実施した。

「Sustainable Reservoir Development & Management」では、松本徳久 教授（(財）ダム技術センター）を始め、坂本忠彦 理事長、山口嘉一 教授、海野仁 主任研究員（いずれも（独）土木研究所)、角哲也 教授（京都大学)、川崎秀明 教授（山口大学)、天野邦彦 室長（国総研)、柏井条介 首席研究員（(財）ダム技術センター）からダムに関する最新の動向や技術について講義を頂いた。

また、「Control Measures for Landslide & Debris Flow」では、大久保駿 教授（(社）全国治水砂防協会）を始め、池谷浩 教授、綱木亮介 部長（ともに（財）砂防・地すべり技術センター)、原 義文 グループ長、石井靖雄 上席研究員、藤澤和範 上席研究員、石田孝司 主任研究員（いずれも（独）土木研究所)、石川芳治 教授（東京農工大学)、高梨和行 講師（アジア航測（株）上席執行役員)、小山内信智 室長（国総研)、山田孝 准教授（三重大学)、渡邉正幸 所長（(有）国際社会開発協力研究所)、吉松弘之 所長（(株）アイエステー斜面工学研究所）から砂防に関する最新の動向や技術について講義を頂いた。

その他、12 月 10 日に世界の洪水専門家を招いて行った「2009 ICHARM Quick Report」や、「ICHARM R&D Seminar」などに積極的に参加させ、我が国や世界の水災害に関する最新の動向・知見を学ぶ機会を数多く与えた。

＜現地視察・演習＞

本コースでは、学生に対して各国における水災害の課題解決のヒントを与えるために、国土交通省現地事務所や各地方自治体などの協力の下、我が国の様々な治水対策施設の見学を実施した。

まず、研修当初の 2009 年 10 月 15 日に渡良瀬遊水地、首都圏外郭放水路、江戸川スーパー堤防などを

見学し、我が国における代表的な大規模構造物対策施設について学習した。なおこの見学は、他の JICA 研修「総合的な河川及びダム管理」と合同実施とし、来日間もない学生間のアイスブレーキングの機会ともした。

2009 年 11 月には、前述の JICA 研修「洪水ハザードマップを用いた地域防災計画」と合同で現地視察・演習を実施した。12 日には、栗橋町内において「プレ・タウンウォッチング」を行い、ハザードマップを作成する際の注意点などを指導しながら、町内に存在する「まるごとまちごとハザードマップ」の紹介や、栗橋駅・栗橋旧町役場に存在する洪水情報板の説明を行った。

16 日から 18 日にかけては、中部地方を訪問し、庄内川改修事業、木曽三川分離事業、雲出川霞堤について、国土交通省担当者から説明を受けながら現地で学習した。三重県伊勢市大湊地区においては、伊勢市職員のご協力の下、「タウンウォッチング」演習をグループ毎に実施し、各グループが実際に歩いたルートを地図上に作図しながら、災害に対して事前にどのような対策や住民への意識啓発を行うべきか議論を行い、学生の理解も深まった。

20 日には、我が国の水文観測の実情を紹介するために、小貝川における水文観測所（黒子水位流量観測所と下館雨量観測所）を訪問した。

12 月 3 日には、忌部正博 准教授（(社) 雨水貯留浸透技術協会 常務理事）の指導のもと、鶴見川遊水地と霧ヶ丘遊水地、および家庭敷地内に浸透施設を設けているお宅を訪問した。特に、高橋裕 名誉教授（東京大学）宅においては、先生直々に浸透施設のご説明を受けることが出来た。

2010 年 4 月 20 日から 23 日にかけては、中国地方・近畿地方を訪問し、主に斐伊川、太田川、淀川の見学を行った。まず大橋川コミュニティセンターで、斐伊川の「三点セット」洪水対策計画全体の説明を受けた後、斐伊川放水路と尾原ダムの見学を行った。さらに広島市へ移動し、太田川の治水計画について高瀬堰や祇園水門を見ながら現地で学習した。22 日は、「人と防災未来センター」（神戸市）の見学を行ったのち、淀川下流部の淀川大堰やスーパー堤防、ワンドなどを見学後、淀川資料館において淀川の歴史や治水計画について学習した。最終日は、我が国最大の規模である亀の瀬地すべり地帯の対策施設見学や、天ヶ瀬ダム、瀬田川洗堰、アクア琵琶の見学を行った。

4 月 27 日には、大雨のもと、群馬県渋川市にて、萬矢講師の指導の下、（株）水文環境の協力も頂きながら、ADCP（Acoustic Doppler Current Profilers：超音波ドップラー多層流向流速計）観測機器を用いた利根川流量観測演習を実施した。

5 月 15 日には、群馬県板倉町で行われた「第 59 回利根川水系連合水防演習」を見学し、国土交通省職員の指導の下、土のう作成やロープ結びの実習を行った。

5 月 26 日から 28 日にかけては、東北地方・関東地方を訪問した。北上川の治水対策として、胆沢ダム建設現場と一関遊水地の見学、ならびに岩手県藤沢町役場を訪問して北上川狭隘地区における「土地利用一体型水防災事業」についての説明を受けた。ちなみに、当事業の現場を外国人が見学したことはなく、我が国の洪水対策として、構造物のハード対策のみならず、ソフト施策の必要性を学生に学ばせたことは有意義であったと考える。また、宮城県大崎市鹿島台地区においては「二線堤」の見学を行い、連続堤のみにとらわれない治水対策について学習した。続いて、関東地方に移動し、日光砂防事務所管内における

砂防事業（大薙山腹工）の視察や、川治ダムと五十里ダムの連携事業の視察を行った。川治ダムにおいては、キャットウォークを歩くことも出来た。

6 月 17 日・18 日には、北陸地方を訪問した。黒部川では、海岸部から上流の宇奈月ダムまで辿りながら霞堤や連携排砂について見学・学習した。ついで、信濃川大河津資料館にて信濃川のこれまでの洪水対策を学習し、現在工事中の新可動堰の見学を行った。さらに、2004 年の中越地震の震源地近くで甚大な被害を受け、大規模な砂防事業が行われた芋川流域を訪問し、長岡市山古志支所で復興 DVD を見た後、河道閉塞対策の現地視察を実施した。

なお、いずれの現地視察においても、各箇所の訪問の最後には学生を代表して 1 名からお礼の挨拶をさせるようにし、さらに視察内容に関するレポートを提出させるようにした。

＜修士論文＞

修士論文作成に関しては、各学生がそれぞれの国での水災害に関する課題解決に資するために研究したい内容を尊重しながら、ICHARM 研究員が個別に面談を行い研究内容のサポートを適宜行った。

まずコース当初 10 月中旬の 3 日間、修士論文作成にあたり、学生が抱える自国の課題を客観的に分析し、論文の方向性を設定するのに大変有用な演習として、外部講師を招き「Project Cycle Management」演習を実施した。

11 月半ばからは、各学生の研究テーマについて竹内教授や Jayawardena 教授など ICHARM 研究員と意見を交換するフリーディスカッションの機会を数回設け、さらに 12 月 22 日の第 1 回を皮切りに、1 月 21 日、4 月 9 日、6 月 3 日および 7 月 16 日の合計 5 回、学生による論文中間発表会を行った。これにより、各学生は ICHARM 研究員からのアドバイスを受けられるだけでなく、他人と比べての自らの進捗度合いを確認することが出来、論文作成の動機付けにも繋がった。なお、昨年度の「Interim Presentation」の回数は 1 回であったが、昨年度の反省からより細かく進捗を確認することが必要と考え、回数を増加させた。8 月 6 日の最終発表会においては、GRIPS から岡崎教授も招き、1 年間の成果を各自披露した。

JICA 募集枠の学生は、その後、帰国後にどのような活動を行うかについて報告する「Action Plan」を作成し、9 月 15 日に土木研究所で発表を行った。

また、昨年度のコースからは日本の学会への論文投稿を積極的に勧めており、今年度のコースにおいては、9 月 7 日～9 日に行われた水文・水資源学会（法政大学市ヶ谷キャンパス）において、Partha 氏（バングラデシュ）と Somchit 氏（タイ）の 2 名が口頭発表することが出来た。本コース設立後、約 3 年をかけて他の大学に劣らない教育体制の充実に努めてきた成果であるとも受け止めている。このような学生の発表の場を彼らへ提供し、よりよい修士論文作成への動機付けを行うことは今後も積極的に行っていきたいと考えている。なお、昨年度のコースで参加した土木学会国際シンポジウムは、開催日が帰国日と重なるため参加が不可能であった。

＜その他＞

毎月 1 回程度は ICHARM 指導教官を含めた Homeroom を開催し、日常の生活についての改善点や修

土論文の進め方等に関して、学生からの意見を聞く機会を設けた。

また、4 月 2 日には、土木研究所理事長・ICHARM センター長共催のもと、「桜を見る会」を土研構内で行い、日本の文化に触れる機会も設けた。

9 月 16 日には、GRIPS にて学位授与式が行われた。森地教授が学生名を一人ずつ読み上げ、壇上にて GRIPS 学長から学位証が手渡され、続いて学生と竹内教授が堅い握手をそれぞれ交わした。参考資料 3-1 に GRIPS と ICHARM が連名で授与する学位記を示す。また Partha 氏は、防災政策プログラム全体の最優秀生として、学部長から学部長表彰（Dean's Award）を頂いた。

続く 17 日には JICA 筑波にて JICA 研修としての閉講式が行われた。なお、菱沼氏は JICA 枠の学生ではないが、JICA 筑波のご配慮により、オブザーバーとして参加している。式においては、JICA 筑波 佐藤所長、土研 魚本理事長、GRIPS 岡崎教授から祝辞の後、JICA と土木研究所からそれぞれ研修修了証が 1 名ずつに与えられた。また今年度から、GRIPS・土木研究所の連名で、優れた修士論文を作成した者に贈られる“Best Research Award”が創設され、竹内教授から Somchit 氏に授与された。さらに、ICHARM から、学生全員の投票によって本コースの運営に最も協力した者に送られる“ICHARM Sontoku Award”も、Somchit 氏に授与された。参考資料 3-2 に土木研究所から授与した研修修了証を、参考資料 3-3 に“Best Research Award”を、参考資料 3-4 に“ICHARM Sontoku Award”をそれぞれ示す。

翌 18 日、外国人学生はそれぞれ自国への帰路についた。

このコースの目的は、前述のように、「国家レベルから住民のレベルまでのあらゆるレベルにおいて、統合的な河川流域マネジメントの枠組みでの洪水マネジメントの計画と実行に役立つことが出来、確固たる理論と技術に基礎を置く課題解決型実務者を養成すること」である。

本コースの学生は、約 1 年間にもおよぶ修士課程の中で、おそらく日本の大学生以上に水文学や水理学、河川土砂学などの基礎知識だけでなく、災害政策や統合洪水マネジメント、地域防災計画やダム工学、砂防工学などの応用知識をみっちりと学ぶことが出来た。さらに、我が国における洪水対策の実情を視察できる機会を多く与えられ、各学生が修士論文に取り組む環境も十分提供出来たと考えている。

しかしながら、「課題解決型実務者」の養成はもちろん、1 年間の修士課程だけで出来るものではなく、帰国後も継続して学生の活動のフォローアップを行う必要を感じている。

Chapter 4:　修士論文について

今年度の修士論文に関する主たるスケジュールを、表 4-1 に示す。

表 4-1　修士論文に関するスケジュール

2009	6th - 7th, October	Presentation on Inception Report
	19th, November	Free Discussion with ICHARM staffs
	7th, December	Free Discussion with ICHARM staffs
	22nd, December	1st Interim Presentation
2010	21st, January	2nd Interim Presentation
	9th, April	3rd Interim Presentation
	3rd, June	4th Interim Presentation
	2nd, July	Deadline of submission of the 1st draft thesis
	16th, July	5th Interim Presentation
	6th, August	Final Presentation on Master Thesis
	23rd, August	Submission of Master Thesis

昨年度のコースでは、論文提出まで 1 ヶ月となった段階でも論文内容の掘り下げの浅い者が複数いたことを踏まえ、今年度は昨年度より早く学生のテーマ設定に着手し、ICHARM スタッフと相談しながら各自の取り組みたいテーマを決定していった。

論文作成は、毎年基本的に学生とその指導教官との個別相談を行いながら進めていくことにしている。昨年度においては Interim Presentation（中間発表会）の実施回数が 5 月下旬の 1 回のみであったためか、他人がどのような研究をどのように行っているかがわからず、自分の研究ペースに満足して修士論文執筆の緊張感に乏しい者が見られた。そのため、本年度は Interim Presentation を 5 回実施し、自らの研究内容について適宜発表させて ICHARM スタッフや他の学生からアドバイスを受けるとともに、他学生の進み具合も把握させ、緊張感を持たせるようにした。また、人前で多く発表させることにより学生の発表能力の向上も図った。

8 月 23 日には主査・副査に修士論文を提出し、審査された結果、12 名全員が無事に「防災政策」の修士号を授与された。

各学生の修士論文タイトルとそれぞれの主査・副査を表 4-2 に示す。なお各論文のシノプシスは、別冊にて別途取りまとめる予定である。

論文作成を通じて、学生の知識が豊富になるばかりでなく、ICHARM にとっても学生との関係が緊密になるため、学生を通じたこのような国際的なネットワーク形成は、今後の ICHARM の活動にも大いに役立つものと思わる。

表 4-2　修士論文リスト

Name	Title	Examiner/Supervisor
Mr. SAHA Partha Pratim (Bangladesh)	Flood Characteristics Analysis for Seven Hydrological Regions of Bangladesh	○Prof. Shigenobu Tanaka (ICHARM) Lect. Mamoru Miyamoto (ICHARM) Asso. Prof. Kazuhiko Fukami (ICHARM) Prof. Shigeru Morichi (GRIPS)
Mr. A.K.M. Saifuddin (Bangladesh)	Statistical Analysis of Climatic Variables	○Prof. Jayawardena Amithirigala (ICHARM) Prof. Shigenobu Tanaka (ICHARM) Asso. Prof. Osti Rabindra (ICHARM) Prof. Kenji Okazaki (GRIPS)
Mr. GONG Zhen Bin (China)	Use Artificial Neural Network to Forecast Rainfall in Fuzhou City	○Prof. Jayawardena Amithirigala (ICHARM) Asso. Prof. Takahiro Sayama (ICHARM) Lect. Mamoru Miyamoto (ICHARM) Prof. Ikuo Shimomura(GRIPS)
Ms. ZEWDE Zinash Mekonnen (Ethiopia)	Development of flood forecasting model in middle awash river	○Prof. Jayawardena Amithirigala (ICHARM) Asso. Prof. Osti Rabindra (ICHARM) Lect. Mamoru Miyamoto (ICHARM) Prof. Hideo Fukui (GRIPS)
Mr. BHUWANA Vidi (Indonesia)	Rainfall Runoff Modeling by using Adaptive-Network-Based Fuzzy Inference System (ANFIS)	○Asso. Prof. Takahiro Sayama (ICHARM) Lect. Dinar Catur Istiyanto (ICHARM) Project Prof. Kei Kudo (ICHARM) Prof. Shigeru Morichi (GRIPS)
Mr. RADEN Panji Satrio (Indonesia)	Flood characteristics of Solo river upstream basin	○Prof. Shigenobu Tanaka　(ICHARM) Lect. Mamoru Miyamoto (ICHARM) Asso. Prof. Katsuhito Miyake　(ICHARM) Prof. Kenji Okazaki (GRIPS)
Mr. SUNTORO Gunawan (Indonesia)	Application of Tank Model in Bogowonto River Basin	○Asso. Prof. Takahiro Sayama (ICHARM) Lect. Dinar Catur Istiyanto (ICHARM) Project Prof. Kei Kudo (ICHARM) Prof. Ikuo Shimomura (GRIPS)
Mr. Nay Myo Lin (Myammar)	Flood Inundation Analysis of Cyclone Nargis	○Asso. Prof. Takahiro Sayama (ICHARM) Prof. Shigenobu Tanaka　(ICHARM) Project Prof. Kei Kudo (ICHARM) Prof. Hideo Fukui (GRIPS)
Mr. FANO Jerry Austria (Philippines)	Analysis of Flood Risk Index in the Philippines using PAR and Access Models for Disaster	○Prof. Kuniyoshi Takeuchi　(ICHARM) Asso. Prof. Katsuhito Miyake　(ICHARM) Lect. CHAVOSHIAN Seyed Ali (ICHARM) Prof. Shigeru Morichi (GRIPS)
Mr. SEENIPELIAGE Chaminda Sugeeswara (Sri Lanka)	Development of Rainfall-Runoff model for Kaluganga basin in Sri Lanka with special reference to flood forecasting in Rathnapura city	○Prof. Jayawardena Amithirigala (ICHARM) Lect. ADIKARI Yoganath (ICHARM) Lect. Hironori Inomata (ICHARM) Prof. Hideo Fukui (GRIPS)
Mr. AMNATSAN Somchit (Thailand)	Water Level Prediction in Nan River, Thailand Using Wavelet Neural Network	○Prof. Jayawardena Amithirigala (ICHARM) Lect. Atsuhiro Yorozuya (ICHARM) Lect. Hironori Inomata (ICHARM) Prof. Ikuo Shimomura (GRIPS)
Mr. Shiro HISHINUMA (Japan)	Interregional comparison of climate change impact using flood and drought duration curves	○Prof. Kuniyoshi Takeuchi　(ICHARM) Asso. Prof. Kazuhiko Fukami (ICHARM) Lect. Hironori Inomata (ICHARM) Prof. Kenji Okazaki (GRIPS)

Chapter 5:　コース評価と今後の課題

5.1　学生によるコース評価

5.1.1　コース評価について

コース全体を通じ計 5 回、学生と ICHARM スタッフが意見交換する場として“Homeroom”を開催し、講義の感想や修士論文の進め方、日常生活に関することなど適宜学生からの要望を聞く場を設けた。また、それぞれのホームルームに際しては、併せてアンケートを行っており、参考資料 5-1～5-5 にその内容と回答結果を示す。

表 5-1　Homeroom 実施一覧

開催日	主な議題	参考資料番号
第 1 回 2009 年 11 月 6 日	ICHARM・JICA 筑波での生活面、講義・講師に関すること、個人研究に関すること　など全般	5-1
第 2 回 2009 年 12 月 22 日	コース開始 3 ヶ月後経過後の ICHARM・JICA 筑波での生活面、講義・講師に関すること、個人研究に関すること　など全般	5-2
第 3 回 2010 年 1 月 21 日	1 月までにほぼ終了した科目について (” Sustainable Reservoir Development & Management”、” Control Measures for Landslide & Debris Flow”、” Mechanics of Sediment Transportation and River Changes”、” Practice on Inundation Analysis”以外の科目) 各科目に対する意見、有用な講師ベスト 3 など	5-3
第 4 回 2010 年 3 月 25 日	” Sustainable Reservoir Development & Management”、” Control Measures for Landslide & Debris Flow”、” Mechanics of Sediment Transportation and River Changes”、” Practice on Inundation Analysis”の 4 科目について 各科目に対する意見、有用な講師ベスト 3 など	5-4
第 5 回 2010 年 6 月 3 日	修士論文の進め方について ICHARM での日常生活について	5-5
JICA 評価会 2010 年 9 月 17 日	1．　設定された到達目標とニーズの適合について 2．　カリキュラム評価 3．　研修期間について 4．　講師の講義プレゼンテーションについて、 5．　テキスト、研修機材、講義施設について 6．　研修運営管理について 7．　期待充足度 8．　到達目標達成度	

以下、[アウトプット]、[講義・演習]、[講師]、[現地視察]、[修士論文]、[その他] それぞれについて、アンケート結果から改善点などを分析する。

5.1.2 単元目標（アウトプット）について

コース最終日となる JICA 評価会において、JICA 研修生 11 名に対して、「5 つの単元目標（アウトプット）はコース目標を達成する上で重要だと考えるか」、また「あなたは 5 つの単元目標（アウトプット）を達成したか」について自己評価をしてもらっている。結果は表 5-2 に示す。

表 5-2 からは、各単元目標の設定について、学生からはおおむね高い評価が得られており、コース目標に対するアウトプットの設定は適切であったと考えられる。

また、同じく表 5-2 からは、自己評価ではあるが、おおむね各学生は単元目標を達することが出来たとの結果が得られている。学生からのコメントとしては、本コースは実務重視型コースなので、もっと現地視察を増やして欲しい、また、統合洪水マネジメントは、国の状況にその適用が依存するため、完全に理解するのは難しいとの声もあった。

表 5-2 単元目標（アウトプット）に対する評価（11 名による評価）

	各単元はコース目標を達成する上で重要だと考えるか?				自己評価による各単元目標の達成度			
	←← Very important		→→ Not important		←← Fully Achieved		→→ Unachieved	
	4	3	2	1	4	3	2	1
1) 世界各地での統合洪水リスク管理における最近の方法について精通すること。	11				5	6		
2) 公共政策を含む地方及び国家レベルでの効果的なリスク軽減に必要とされるものを明らかに出来るようになること。また、地方及び国家レベルでのリスク管理体制、組織間の協調及び利害関係者を含む管理の体制について計画できるようになること。	6	5			2	9		
3) 非常時の対応及び災害リスク軽減政策における変化を見つけ出し監視するための地方及び国家レベルでの指標を作り出し、これらの政策の状況及び効果を監視できるようになること。	8	3			2	8	1	
4) 明確な財政的、制度的及び法的枠組みのもとに新たに突き止められた統合リスク管理政策により作成された計画の履行に貢献出来るようになること。	8	3			5	5	1	
5) リスク感知及び情報伝達問題や地球温暖化・気候変動などの新しい脅威に配慮しながら非常時の対応、復旧、緩和及び準備などの全ての管理構成要素を考慮に入れたリスク管理戦略を開発できるようになること。	8	3			2	9		

5.1.3　講義・演習について

講義・演習については、第 3 回及び第 4 回の Homeroom、また最終日の評価会で重点的に意見を聞いており、以下ではその結果を示す。

まず、第 3 回の Homeroom に先立ち、学生に参考資料 5-3 のアンケートを行った。アンケートにおいては、1 月までにほぼ終了した科目に対する意見と、「あなたの国の水関連災害被害軽減のための、最も有用な講義ベスト 3」を挙げてもらっている。後者について結果を表 5-3 に示す。（なお、表 5-3 の結果は、全ての科目を対象としていない点に注意する必要がある。例えば、" Sustainable Reservoir Development & Management"や" Control Measures for Landslide & Debris Flow"は含まれていない）

表 5-3 によると、12 人中 6 人が"Hydrology"および" Basic Concepts of IFRM"の科目、12 人中 5 人が"Local Disaster Management and Hazard Mapping"を挙げている。"Hydrology"は、水関連災害解決策立案には欠かせない基礎科目であり、半数の学生がこの科目を挙げたのは心強い。また" Basic Concepts of IFRM"は、学生にとって非常に新鮮な内容が多く含まれる科目であり、本コースの学生のような実務者に対しても、災害リスクマネジメントの理論面から有用な知識を与えるものだとの確信を強く持った。

"Local Disaster Management and Hazard Mapping"では、日本の防災システムの講義に加えて、日本の防災行政担当者からの直接の講義や、地域防災に関する住民からの講話、さらには埼玉県久喜市（旧栗橋町）や三重県伊勢市でのタウンウォッチング演習など多様な内容を実施しており、アンケートの結果からは、多くの学生は" Basic Concepts of IFRM"の実践的科目と受け取っているようである。また、本科目に含まれる講義として"Human behavior and social psychology"や"River Information and Early Warning System in Japan"、"PCM"を挙げる学生もおり、本科目のシラバスの有用性が強く裏付けられている結果となっている。評価会のアンケートでは、11 人中 8 人が Town Watching について、11 人中 6 名がコミュニティ防災（共助など含む）についてその重要性に対するコメントをしており、我が国の洪水対策は予算がかかる大規模な施設によって実施されているとの先入観を持って来日する学生にとっては、いずれの概念もかなり印象深く残ったようである。

また、3 人が"Computer Programming"（Fortran と答えた者も含む）を挙げており、講師の教え方や教材の良さを含め、実務者向けの実践的な科目として評価する声が高い。

興味深い結果として、同じ 3 人（Student No.1,2,12）が、"Community based disaster management"と"Global trends"を Rank1～3 の間に挙げている。偶然の一致かも知れないが、地球レベルの温暖化問題を議論するためには、逆に住民レベルでの議論や活動から始めないといけないとの意識の表れかも知れない。

表 5-3　「あなたの国の水関連災害被害軽減のための、最も有用な講義ベスト 3」一覧表

Student No.		Lecture	Reason
1	Rank 1	Community based disaster management in Ohminato	This gives a good idea how to involve a community in the management of disaster.
	Rank 2	Global trends(1)- Impact of climate change	Bangladesh is one of the countries expected to be affected by climate change. This lecture contains some idea to deal with climate change and existing water resources.
	Rank 3	Human behavior and social psychology	This lectures described the cause individual death in a disaster to develop Hazard Map. In our country we should consider to take any measure after any disaster.
2	Rank 1	Impact of climate change	Bangladesh being one of the worst victims of climate change has to prepare for its surface water resource conservation from now. His lecture deals with this issue.
	Rank 2	Dr. Watanabe	Formation of bar, alternative bar etc. Very common in Bangladesh river.
	Rank 3	Community level participation in Disaster mitigation	Community level participation in Disaster Mitigation is still weak in Bangladesh. We can learn from examples of Japan.
3	Rank 1	Local Disaster management and Hazard mapping	I knew about the advanced experience on disaster management, especially the hazard mapping, it is very good for disaster mitigation, which is most important task we should focus and complete now.
	Rank 2	Basic Concepts of IFRM	This course gave me a complete new idea about IFRM, it is very good for flood risk management.
	Rank 3	Computer Programming	Numeric Programming is a very powerful tool for all kinds of problems, and by this course, I learned about the programming idea, this is very important.
4	Rank 1	Basic and advanced hydrology	It is the base or the initial point for every water related analysis.
	Rank 2	Integrated flood risk management	Because we are trainees for flood disaster mitigation it is very important for us.
	Rank 3	Mechanics of sediment transportation and sediment change	If there is flood problem, there will be sediment transportation so it is basic course also.
5	Rank 1	Basic Concepts of IFRM	Overcoming water related disaster has to be done by integrating of all sector.
	Rank 2	Hydrology	Hydrology is very fundamental to be understood, especially in establishing base concept of counter measures to mitigate water related disaster.
	Rank 3	Flood Hydraulics	My country is very prone to flood, so it is a need to understand the hydraulics behavior before, during and after flood
6	Rank 1	Hydrology	The concept and the basic idea of this lecture is very important for us to making decision in our duty work.
	Rank 2	River Engineering	The concept and the basic idea of this lecture is very important for us to making decision in our duty work
	Rank 3	Hydraulic	The concept and the basic idea of this lecture is very important for us to making decision in our duty work
7	Rank 1	Hydrology	This lecture is the fundamental knowledge of water resources and how to manage it in every place in the world.
	Rank 2	River Information and Early Warning System in Japan	Japan has good effort to develop and maintain system information about river and early warning system. My country should learn more about it.
	Rank 3	Computer Programming	This is very useful to learn how to make programming by our self and it will be useful and applicable in my office.
8	Rank 1	Basic concept of IFRM	Development of effective flood disaster management plan.

	Rank 2	Rainfall runoff modeling	Improvement of forecasting and warning system.
	Rank 3	Flood hazard map and local disaster management plan	For the improvement of non-structural measures of flood control system in my country.
9	Rank 1	Prof. Takeuchi	He always patiently explain to us the general concept of disaster risk management and always challenges us to not just to be observer but be an active participant to it. More than the concepts of IFRM, Prof. Takeuchi promotes the change in behavior and attitude of community to be better prepared for disaster risks.
	Rank 2	Prof. Jayawardena	He has scholarly presented the topic on Hydrology taking careful consideration of the viewpoint of us masters students. Moreover, he gives good advice on our thesis topics, allowing us to develop our confidence by leading us to the right direction with our topic.
	Rank 3	Prof. Tanaka	I like Prof Tanaka's presentation and humanization of notable Japanese people such as Shontoku and Hokusai relating to disaster mitigation. Sometimes the best way to understand the concept of IFRM is to know the early people who were at risk and took the challenge by turning disaster into opportunity, by being resilient. I guess this is the concept of this course by preparing us to become good disaster planners and managers someday.
10	Rank 1	Flood Forecasting methods in Japan	My country is considerably behind in non structural measures such early flood warning.
	Rank 2	Flood Hazard Mapping	
	Rank 3	Fortran	The language has many applications in everywhere.
11	Rank 1	Basic Hydrology	It is a very important subject which is applied in most of water-related disaster mitigation.
	Rank 2	Basic Concepts of IFRM	This subject is the key idea of the water-related mitigation. It gave us how to make the measures we have develop effective in the real situation which only the technical knowledge is not enough.
	Rank 3	Local Disaster Management and Hazard Mapping, Practice on Hazard Mapping	This subject enable us to learn the real cases of disaster management both successful and failure one. We can adapt these experiences to disaster management in our country.
12	Rank 1	Global trends	Full of general and latest information of global hydrological cycle and climate change.
	Rank 2	PCM	A kind of logical game is useful tool for participatory planning
	Rank 3	Community based disaster management in Enza	Importance of local community and society toward disaster mitigation was recognized.

3 月末には、1 月末のアンケートには聞けなかった 4 科目（" Sustainable Reservoir Development & Management"・" Control Measures for Landslide & Debris Flow"・ " Mechanics of Sediment Transportation and River Changes"・" Practice on Inundation Analysis"について、各科目に対する意見を聞くとともに、" Sustainable Reservoir Development & Management"と" Control Measures for Landslide & Debris Flow"の 2 科目に対して、それぞれの Best Lecturer を尋ねている。

以下、それら 4 科目を含めた全ての科目に対する、学生からの意見で重要なポイントを示す。また、主な Good point と Bad Point を表 5-4 に示す。

"Basic concept of IFRM"の講義は、多くの講師が担当しているが、昨年度までに見られた「講義内容に重複が見られる」旨の意見をもとに講義内容を調整した結果、そのような回答はなくなった。

また前述のように、"Local Disaster Management and Hazard Mapping"の講義・演習は他の JICA 研修コース「洪水ハザードマップを用いた地域防災計画研修」と合同で実施したが、様々な国からの専門家

の参加がクラスを豊かにした（**The expert participants of various countries enrich the class.**）との意見や、他コースが参加したことにより大変思い出深いものとなった（**This lecture is truly memorable as we were made to join another training group on FHM.**）との意見もあり、他コースとの合同実施が学生に好影響を与えることも確認された。逆に、他コースとの合同実施に対する反対意見は聞かれなかった。

"Flood Hydraulics and Sediment Transport"は、自分にとって内容が新鮮でよかったと言う学生が多くおり、毎年評価が高い。

"Practice on Flood Forecasting"は、現在 ICHARM で開発を進めている IFAS に関する演習であり、今年度から新たに開講した科目である。学生からの意見としては、おおむね好評であったが、より演習が必要であるとの意見もあった。

"Sustainable Reservoir Development & Management"および"Control Measures for Landslide & Debris Flow"は、自国で適用可能な科目であるとの意見が多かった反面、専門的すぎる、内容が多すぎて理解が難しいとの回答もあった。

また、演習系の講義は、毎年演習時間が少ないとの意見が多いが、各学生の理解度も異なることから、自主演習の材料等を多く与える方が良いと思われる。

表 5-4　各科目に対する Good point と Bad Point

科目		学生からのコメント
Basic Hydrology、Advanced Hydrology	Good Point	● シラバスは全ての項目をカバーしている ● 教科書や参考資料が充実していた
	Bad Point	● 内容が難しい、内容を消化するにもっと時間が欲しい ● もっと演習の時間が欲しい
Hydraulics、Practice on Hydraulics	Good Point	（内容について評価の声が多い）
	Bad Point	● 片道 3 時間かけて東京工業大学に移動したため、授業の前に疲れてしまう ● 授業時間の割に内容が多い ● 配付資料が数枚のパワーポイントであり、参考資料が十分でなかった
Basic Concepts of Integrated Flood Risk management (IFRM)	Good Point	● これまでこのような講義を受けたことがなく多くの新しい知識・知見が得られた ● 洪水リスク管理に関する理論的・実践的知識を得ることが出来た ● 教材として与えた「At Risk」によってより深く学習できた ● 多くの分野の多くの専門家から有益な情報を得られた
	Bad Point	（特になし）
Local Disaster Management and Hazard Mapping	Good Point	● Town Watching などの現地演習や多くの現地視察を行った ● 理論と実践が良いコンビネーションで行われた
	Bad Point	● 他の国のハザードマップの状況も知りたい
Flood Hydraulics and Sediment Transport	Good Point	● 河岸植生が洪水に与える影響などこれまで知らなかった新たな知見が得られた ● 講師の教え方がわかりやすかった ● 資料もよく準備されていた
	Bad Point	● いくつかの講義は他の科目と重複している
Computer Programming	Good Point	● 資料も講師の教え方も良かった ● 課題を与えられたことも理解を助けてくれた
	Bad Point	● この科目は短期間に集中して実施されるべき ● もっと時間が欲しい

		● 授業のスピードが遅かった
Practice on Flood Forecasting	Good Point	● 内容については目新しくかつ実践的
	Bad Point	● もっと演習が必要である ● 授業内容が簡単すぎる
Sustainable Reservoir Development & Management	Good Point	● 我々にとても適用可能な科目である ● 日本のダム開発のとても良い理解が出来た
	Bad Point	● 多くの講義が専門的すぎたので、ダムについての概論で良いと思う ● バングラデシュには１つのダムしか無く自分の学んだことをすぐに履行できない ● 内容が多すぎて短い期間では理解が難しい
Control Measures for Landslide & Debris Flow	Good Point	● 実務的かつ持続可能な解決法を適用するための洞察が得られた ● 自分の仕事に役に立つ ● 各学生からのレポート発表は、それぞれの状況を共有するのに良い方法である
	Bad Point	● 内容が多すぎて短い期間では理解が難しい ● 演習の時間が短かった ● バングラデシュには地すべり災害がないので、知識を活かす場がない ● 日本における地すべり対策はコストがかかるので自国への適用は非常に難しい
Mechanics of Sediment Transportation and River Changes	Good Point	● 最も楽しくかつ多くを学べた科目である ● 自国での河川改良事業に役に立つ ● 土砂輸送の基礎的なメカニズムだけでなく、土砂管理の最新の情報を得ることが出来た ● 先生は自らの経験を良く紹介してくれた
	Bad Point	● 多くを学んだが、事例の紹介が少なく、これらの理論の使用法がわからない ● より多くの演習や関連した問題が必要である ● 良い講義であったが、扱う範囲が広いので参考図書が欲しい ● 河道変化の予測に関する演習が十分でない
Practice on Inundation Analysis	Good Point	● 講師は忍耐強く、明確に教えてくれた ● 我々自らが分析を行うことで、浸水区域図の作成方法が明確に理解できた ● HEC-RAS は無料で使える良いソフトである ● 実現象に適用するためにとても良く、重要な科目である
	Bad Point	● 理解を深めるにはより多くの演習が必要 ● いくつかの例を用いて、１次元解析の限界を示して欲しい

5.1.4　講師について

講師については、講義・演習と同様、第３回及び第４回の Homeroom で重点的に意見を聞いており、以下ではその結果を示す。

まず、第３回の Homeroom において、ICHARM のスタッフと“Sustainable Reservoir Development & Management”および”Control Measures for Landslide & Debris Flow”の各講師を除き、最も優れた講師ベスト３を選んでもらっている。その結果を表 5-5 に示す。

表 5-5　「最も優れた講師ベスト３」一覧表（回答数：12）

（ICHARM スタッフ、“Sustainable Reservoir Development & Management”および”Control Measures for Landslide & Debris Flow”の各講師は除く）

Student No.	Rank 1	Rank 2	Rank 3
1	Prof. Oki	Prof. Ishikawa	Prof. Egashira
2	Prof. Oki	Prof. Ishikawa	Prof. Egashira
3	Prof. Fukuoka	Prof. Ishikawa	Prof. Oki
4	Prof. Fukuoka	Prof. Egashira	
5	Prof. Fukuoka	Prof. Ishikawa	Prof. Egashira
6	Prof. Fukuoka		
7	Prof. Egashira	Prof. Fukuoka	Prof. Ishikawa
8	Prof. Fukuoka	Prof. Egashira	Prof. Oki
9	Prof. Oki	Prof. Egashira	Prof. Ishikawa
10	Prof. Egashira	Prof. Fukuoka	Prof. Oki
11	Prof. Egashira	Prof. Ishikawa	Prof. Oki
12	Prof. Fukuoka	Prof. Oki	Prof.Meulen

ここに挙げられたほぼ全ての講師の特徴は、複数回の講義を担当頂いていることと、昨年度と同様、大学教授である（あった）ということである。やはり、普段から教壇に立っている経験から、学生の集中力を持続させる方法を心得ていると思われる。特に共通しているのは、（複数回の講義を担当頂いているせいかもしれないが）、講義のスピードがゆっくりで、かつ学生と時折コミュニケーションをとりながら授業を進めている点である。

特に、福岡捷二教授（中央大学）は、講義の時期（10 月頃）とアンケート実施時期（1 月末）が離れているにも係わらず、講義の内容とともに高評価であり、12 人中 6 人が 1 位に、2 人が 2 位に推している。また、沖大幹教授（東京大学）は 2 回しか講義機会が無かったのにもかかわらず、8 人から名前が挙げられており、講義内容もさることながら、よほど教え方の印象が素晴らしいと思われる。加えて、石川忠晴教授（東京工業大学）や江頭進治教授（(株)ニュージェック）についても、高い評価を得ており、次年度以降についても今年同様質の高い講義をお願いしたく思っている。

続いて、第 4 回の Homeroom において、 “Sustainable Reservoir Development & Management”および”Control Measures for Landslide & Debris Flow”の各講師に対して、最も優れた講師ベスト 3 をそれぞれ選んでもらっている。

まず、“Sustainable Reservoir Development & Management”における「最も優れた講師ベスト 3」の回答結果を表 5-6 に示す。

表 5-6 「最も優れた講師ベスト 3」一覧表（回答数：11）
（ “Sustainable Reservoir Development & Management”の各講師対象）

Student No.	Rank 1	Rank 2	Rank 3
1	Dr. Matsumoto	Dr. Amano	Dr. Umino
2	Dr. Sakamoto	Dr. Matsumoto	Dr. Yamaguchi
3	Dr. Matsumoto	Dr. Yamaguchi	
4	Dr. Yamaguchi	Dr. Umino	Dr. Sakamoto
5	Dr. Sakamoto	Dr. Umino	Dr. Yamaguchi
6	Dr. Yamaguchi		
7	Flood Control Plan and Operation (Dr. Umino)	Environmental Impact of Dams (Dr. Amano)	Sediment Management in Reservoir (Prof. Sumi)
8	Dr. Matsumoto	Dr. Yamaguchi	
9	Dr. Matsumoto	Dr. Yamaguchi	
10	Prof. Sumi	Dr. Yamaguchi	Dr. Amano
11	Dr. Matsumoto	Dr. Amano	Dr. Umino

“Sustainable Reservoir Development & Management”に関し、本年度行った特筆すべき改善点として、科目全体を俯瞰するテキストとして『Dams in Japan –Past, Present and Future-』（編集：Japan Commission on Large Dam（日本大ダム会議））を各学生に配布し、かつ 15 コマを通じて本テキスト 1 冊の内容を終えられるよう、責任教官である松本徳久教授を中心にして関係講師間での講義内容の調整を行ったことが挙げられる。表 5-7 はその担当分担表であるが、担当となって頂いた坂本忠彦 理事長（土木研究所）、松本教授、海野仁主任研究員（土木研究所）、角哲也教授（京都大学）、天野邦彦室長（国総研）の 5 人全てが表 5-5 に含まれる結果となっており、やはり何らかの形で 1 冊のテキストを通読する方が、学生の印象も深く学習効果も高まるものと思われる。

併せて表 5-6 からうかがえることとして、11 人中 8 人が山口嘉一教授（土木研究所）、6 人が松本教授、5 人が海野主研を優れた講師として選んでいる。もちろん、全ての講師の方からダムに関する最新の知見や技術などの有用な講義を頂いているが、これらの方は上記の理由に加えて、それぞれ 2 コマの講義を頂いているのが特徴である。なお、松本教授と山口教授には、各学生のレポート発表の際にも適切な講評やコメントを頂いており、より学生から親近感を抱かれた可能性もある。

逆に、天野邦彦室長（国総研）は 1 度の講義（「ダムが環境面にもたらす影響)）にもかかわらず評価が高くなっており（11 人中 4 人)、学生の環境への関心が高かったことがうかがえる結果となっている。

表 5-7　『Dams in Japan –Past, Present and Future-』の担当分担表

Chapter	Page	Content	Lecturer
1	pp.1-20	Introduction	Dr. Sakamoto
2.1～2.4	pp.21-70	Roles played by dams as seen in the history of water use in Japan	Dr. Matsumoto
2.5	pp.71-99	Dams that have supported the concentration of population and industry in large cities and the advance of national urbanization	Dr. Umino
3	pp. 101-149	Environmental and social impacts of dams and response to these impacts	Prof. Sumi & Dr. Amano
4	pp.151-179	Role of dams The future	Dr. Matsumoto

続いて、”Control Measures for Landslide & Debris Flow”における「最も優れた講師ベスト 3」の回答結果を表 5-8 に示す。

表 5-8　「最も優れた講師ベスト 3」一覧表（回答数：11）
（ ”Control Measures for Landslide & Debris Flow”の各講師対象)

Student No.	Rank 1	Rank 2	Rank 3
1	Dr. Fujisawa	Dr. Ishii	Dr. Tsunaki
2	Dr. Yoshimatsu	Dr. Takanashi	Dr. Ikeya
3	Dr. Takanashi	Dr. Fujisawa	Dr. Ikeya
4	Mr. Watanabe	Prof. Ishikawa	Dr. Ikeya
5	Dr. Ikeya	Dr. Okubo	Dr. Fujisawa
6	Dr. Tsunaki	Dr. Fujisawa	
7	Application of Sabo (Dr. Ikeya & Dr. Hara)	Dr. Fujisawa	Dr. Takanashi
8	Dr. Fujisawa	Mr. Watanabe	Dr. Takanashi
9	Mr. Watanabe	Dr. Fujisawa	Dr. Takanashi
10	Mr. Watanabe	Dr. Fujisawa	Dr. Ishii
11	Dr. Fujisawa	Dr. Ishii	Dr. Tsunaki

表 5-8 からは、実に 11 人中 9 人が藤澤和範上席研究員（土木研究所）を選んでいることが特筆される。藤澤上席は国内外での現地での経験が豊富であり、それらをもとに講義頂いたのが好印象ではなかったかと思われる。また、5 人が高梨和行 講師（アジア航測（株）上席執行役員)、池谷浩 教授（(財）砂防・地すべり技術センター 理事長)、4 人が渡邉正幸 所長（(有）国際社会開発協力研究所）の名前を挙げている。また、藤澤上席、高梨講師、池谷教授にも 2 回以上講義頂いており、ここでも複数回講義の有用性

が裏付けられている。渡邊所長は1回のみの講義であるが、途上国における自らの経験を踏まえ独自の視点で砂防について講義されていることから、学生の評価が非常に高かったものと思われる。

5.1.5　現地視察について

前述の通り、本コースでは約30箇所における現地視察を実施し、視察の度に学生にはレポート課題を課し、常に自国の洪水対策と比較させて考察させるようにした。

また、次年度以降の視察箇所選定のために、視察箇所についてアンケートを行い、どの場所が良かったか1位から5位でランク付けさせた。結果を表5-9に示す。

『首都圏外郭放水路（Metropolitan Area Outer Underground Discharge Channel）』は12人中実に9人がランク中に挙げており、コース当初の10月の実施だったことを考えると、よほど学生の印象に残ったようである。感想を見ると、”道路下の空間を利用しており、土地の有効利用としてスマートだ“ “高度に都会化された所では適切な方法”“この方法はとても新鮮である” などの回答の一方、 ”ハイテクすぎて他の国には適用できない”や、”フィリピンではこの規模の施設は難しい”などの回答もあり、必ずしも各国で適用可能として受け入れられたわけではない。

続いて、12人中7人が選んだのが、『日光砂防事業（Nikko Sabo）』であった。実は本コースでは、視察箇所のスケジュール等の都合で、あまり砂防事業の現地視察を行えなかったが、普段はあまり身近に見ない巨大な砂防ダムや、無人化施工での山腹工を目の当たりにし、洪水対策における砂防の重要さが学生に伝わっていればと思う。

同じく12人中7人が選んだのが、『渡良瀬遊水地（Watarase Retarding Basin）』であった。こちらも、首都圏外郭放水路と同じく10月の実施であったが、学生の感想として”環境保護の機能を持っている”や”環境と調和した技術はインドネシアでも適用できる”や、“洪水防御機能のみならず、生物の日常生活の水を保全している”など、環境面での機能を評価する声が高かった。

また、施設名を挙げた回答が多い中で、『大湊地区でのタウンウォッチング（Town watching in Ominato District）』（11月実施）を挙げたものが4名いたのも非常に心強い。タウンウォッチングはグループ毎にまちなかを歩き、防災面における問題点を議論し地図上に図示する演習であるが、コストや時間のかからない効果的な方法として、この演習は毎年学生には好評である。

5.1.6　修士論文の進め方について

各学生が修士論文に取り組む時期は、毎年早めてきており、本年度は11月中にICHARMスタッフと話し合い、12月22日には第1回の中間発表会を実施した。しかしながら、もともと1年で修士号を取得できるコースとして各スケジュールを設定しているため、コース当初は修士論文に関する時間がなかなか割けず、学生からはコーススケジュールがタイトで個人研究に時間を割けないとの意見も聞かれた。また、スーパーバイザーをコースの最初の段階で選んで欲しいとの意見もあった。

表 5-9　学生の評価が高かった現地視察箇所（ランク 1 位～5 位）

	Rank 1	Rank 2	Rank 3	Rank 4	Rank 5
1 Bangladesh	Kamenose landslide countermeasure	Disaster reduction and human renovation institute	Metropolitan Area Outer Underground Discharge Channel	Integrated flood control project at Shounai river	Construction of Isawa dam
2 Bangladesh	Watarase Retarding Basin	the 59th Tone River Flood Fighting Drill	Metropolitan Area Outer Underground Discharge Channel	The Dams and Diversion Channels	Nikko Sabo
3 China	Metropolitan Area Outer Underground Discharge Channel	Super levee	Hii River Divergence Channel	Nikko Sabo	Ikari dam and Kawaji dam
4 Ethiopia	The Dams and Diversion Channels	the 59th Tone River Flood Fighting Drill	Watarase Retarding Basin	Metropolitan Area Outer Underground Discharge Channel	Sabo works
5 Indonesia	Metropolitan Area Outer Underground Discharge Channel	Nikko Sabo	Watarase Retarding Basin	Kamenose landslide countermeasure	Kitakami
6 Indonesia	Ichinoseki Retarding Basin Project	Watarase Retarding Basin	Metropolitan Area Outer Underground Discharge Channel	Yodo River	Hii River
7 Indonesia	the 59th Tone River Flood Fighting Drill	Kamenose landslide countermeasure	Metropolitan Area Outer Underground Discharge Channel	Tsurumi River Multi Purpose Runoff Retarding Basin	Town watching in Ominato District
8 Myanmar	Ichinoseki Retarding Basin	Watarase Retarding Basin	Kamenose landslide countermeasure	Nikko Sabo	Town Watching in Ominato District
9 Philippine	Watarase Retarding Basin	Metropolitan Area Outer Underground Discharge Channel	Edogawa Super Levee	Oota River	Secondary Levee in Ohsaki City
10 Sri Lanka	Super levee	Metropolitan Area Outer Underground Discharge Channel	Hii River Diversion Channel	Nikko Sabo	Okhouzu Diversion Channel
11 Thailand	The interview with community leader of Enza district	Town watching in Ominato district	Nikko Sabo	Watarase Retarding Basin	Integrated flood control project of Kurobe River
12 Japan	Kurobe river	Nikko Sabo	Town watching in Ominato district	Construction of Obara dam	Secondary levee

5.1.7　研修期間について

JICA 評価会でのアンケートにおいて、本コースの期間について妥当か否かを尋ねている。研修期間については、「長い」が１名、「妥当」が６名、「短い」が３名であった（無回答１名）。昨年度は「妥当」が３名、「短い」が５名であったことを考えると、研修期間を短いと考える学生の割合が減少した（62.5%→27.3%）。昨年度は、８月になっても修士論文の完成度が低い者が多く、論文提出間際、あるいは締め切りを過ぎても修正を行う者がいたため、研修期間を短いと感じる学生が多かったからかも知れない。今年度はその反省に立ち、修士論文のテーマ設定を前年度以上に早く行ったり、中間発表会を数多く実施して論文作成のペースアップを促したり、ICHARM 研究員との相談の機会を多く持たせたりするなど、修士コース１年間（実質 11 ヶ月）という限られた期間を有効に活用するため、さまざまな方策を行った。これらが、研修期間を妥当と考える学生の割合増加に繋がったものと考えられ、次年度以降の研修計画にも活かすことが必要である。

5.2　ICHARM によるコース評価

5.2.1　学生のコース到達度達成評価

資格要件に外れた学生はいなかったが、途中で家庭の事情のため１名が帰国したことは残念である。

また、どのコースにも言えることではあるが、学生の教育背景や現在従事している業務、あるいは学習能力がまちまちであるため、講義や演習の実施に若干の支障を来す部分があった。

表 5-10 では、単元目標（アウトプット）毎に達成度の評価を行った。

この結果、以下のコース目標に対しては、

> **The program objective is to develop the participant's capacity to practically manage the problems and issues concerning water-related disasters in local levels and to contribute for socio-economic and environmental improvements in regional and national levels in developing countries.** （国家レベルから住民のレベルまでのあらゆるレベルにおいて、統合的な河川流域マネジメントの枠組みでの洪水マネジメントの計画と実行に役立つことが出来、確固たる理論と技術に基礎を置く課題解決型実務者を養成すること。）

各学生は、"Hydraulics"や"Basic Concepts of Integrated Flood Risk management (IFRM)"や"Local Disaster Management and Hazard Mapping"、 "Flood Hydraulics and Sediment Transport"や" Sustainable Reservoir Development & Management"などの講義・演習や日本各地への現地視察を通じて、洪水対策に必要な最新の基礎的・応用的知識を習得し、現地コミュニティにおける水関連災害への実務的対処能力向上や、国家レベルからコミュニティレベルの各段階において、社会経済的・環境を重視した改善への貢献に必要となる知識や技術を習得することが出来、その結果、統合洪水マネジメント分野における専門家へ成長することが出来たと考える。

今後、各学生は、本コースで習得した内容を自国の水災害被害軽減対策立案および履行に出来る限り資するよう努力する必要があり、さらにそれらをフォローアップできる体制づくりが望まれる。

表 5-10　学生の達成度評価一覧表

単元目標（アウトプット）	指標	達成度
1)　世界各地での統合洪水リスク管理における最近の方法について精通すること。	講義中のディスカッション、テストの実施	学生全員、講義やディスカッションを通じて統合洪水リスク管理に対する一般的な知識はおおむね理解できた。
2)　公共政策を含む地方及び国家レベルでの効果的なリスク軽減に必要とされるものを明らかに出来るようになること。また、地方及び国家レベルでのリスク管理体制、組織間の協調及び利害関係者を含む管理の体制について計画できるようになること。	現地でのタウンウォッチング、テストの実施	三重県伊勢市でのタウンウォッチングや住民へのヒアリングにより、洪水ハザードマップによるリスク軽減の有用性を理解できた。また、講義を通じてリスク管理についての日本の行政体制・法制度を理解できた。
3)　非常時の対応及び災害リスク軽減政策における変化を見つけ出し監視するための地方及び国家レベルでの指標を作り出し、これらの政策の状況及び効果を監視できるようになること。	レポートの作成、テストの実施	洪水管理に必要な水文学や水理学などの基礎知識、洪水管理のための主要な構造物である堤防やダム、砂防事業などについて、講義・演習ならびに現地視察を行いその重要性について理解できた。これらにより、非常時の対応及び災害リスク削減政策における変化を見つけ出し監視するための指標を作り出すことが可能になる。
4)　明確な財政的、制度的及び法的枠組みのもとに新たに突き止められた統合リスク管理政策により作成された計画の履行に貢献出来るようになること。	修士論文の作成	各学生は、自らの機関が抱える洪水関連問題を認識し、その解決のためにどのような政策が可能かを検討し、修士論文としてとりまとめた。
5)　リスク感知及び情報伝達問題や地球温暖化・気候変動などの新しい脅威に配慮しながら非常時の対応、復旧、緩和及び準備などの全ての管理構成要素を考慮に入れたリスク管理戦略を開発できるようになること。	講義の受講態度や演習の成果、修士論文への取り組み姿勢などを加味した総合評価	半年間での、様々な講義・演習、現地視察によって、学生は様々な知識、技術を習得し、リスク管理戦略を開発できる能力を身につけた。

5.2.2　コース全体に対する評価と今後の課題

1)　全体を通じての評価

本コースは3期目であるが、昨年度のさまざまな反省を踏まえて実施し、総合評価ではほとんどの学生が単元目標（アウトプット）を達成し、また、全員が防災修士号を授与され、コースを無事終了することが出来た。

昨年度と比較すると、学生間での能力のばらつきは大きかったが、平均的な能力は昨年度より上であった。特にPartha氏（バングラデシュ）とSomchit氏（タイ）の成績上位2名は、水文・水資源学会（9月実施）において口頭発表を行うことが出来、本コースの大いなる成果と言える。またPartha氏は防災政策プログラム全学生中で最優秀の成績でGRIPS学部長表彰され（Dean's Award）、Somchi氏はGRIPS・土木研究所から連名で“Best Research Award”、ICHARMから“ICHARM Sontoku Award”を受賞するなど、2名の活躍が際だった3期目であった。

他の学生も、提出物や集合時間を良く守り、コース運営は非常に楽であった。昨年度は、時間や締め切りにルーズなところが散見されたが､今年度は日本人学生が1名おり､外国人学生は彼のやり方を見たり、教えられたりしながら、時間通りに行動することの重要性などを体得していったと考えられる。

2）他の研修コースとの連携

本コースの最中となる11月には、JICA研修「洪水ハザードマップを用いた地域防災計画」を並行して実施しており、ほぼ全ての講義・演習・現地視察を合同で実施した。

「洪水ハザードマップ～」と合同で実施することにより、総勢23名、学生の国の数はバングラデシュ・ブータン・中国・エチオピア・インドネシア・日本・ラオス・ミャンマー・パキスタン・フィリピン・スリランカ・タイ・タジキスタンと、アジアの中でも洪水災害が多い地域をほとんどカバーする計13カ国で研修を行うこととなった。

そのため、非常に国際色豊かな研修となって学生間での交流が深まるとともに、講義・演習において活発な議論が行われた。学生の意見としても、「様々な国からの専門家の参加がクラスを豊かにした（**The expert participants of various countries enrich the class.**）」や、「他コースが参加したことにより大変思い出深いものとなった（**This lecture is truly memorable as we were made to join another training group on FHM.**）」との意見もあり、他コースとの合同実施が学生に好影響を与えることも確認された。しかしながら、質問の時間が十分に得られなかったとの意見もあったため、次年度のコースにおいては、それぞれのコース目的を考慮し、それぞれのコース参加者の質問の時間を十分配慮しつつ、他の研修との連携を行う方針としたい。

3)　今後の課題

今年度のコース実施で見えてきた次年度以降の課題は以下の通りである。

＜授業中＞

授業中あるいは他の学生の発表中にも関わらず、教室を離れる学生が多かった。文化の違いかも知れないが、コース当初のオリエンテーション時に、授業に集中する意識を徹底させる必要がある。

＜現地視察について＞

学生にとって現地視察は、我が国の治水対策を目の当たりに出来る貴重な学習機会であり、実務を重要視するコースとしても、内容をさらに充実させる必要もある。また、見学を単なる物見遊山に終わらせないためにも、事前には関係パンフレットを必ず配布して予習させるようにした。さらに、事後にはレポート作成を課し、我が国の洪水対策について各国の状況と比較しながら考察する習慣をつけさせた。レポート作成は、英文作成の基本能力を向上させるためにも引き続き実施する必要がある。また、現地に到着すると、説明を聞かずに周囲の写真を撮ることに夢中になる学生が少なからず見られるため、上と同様、コース当初のオリエンテーション時に、徹底させる必要がある。

＜修士論文の円滑な作成について＞

英文での修士論文作成のためには、そのための英語研修を集中的に実施する必要がある。また引き続き、論文作成時の英文の指導も実施する必要がある。さらに、論文作成に必要となる基本的なパソコンソフトのワードやエクセルについても使い方を指導する必要がある。

＜修士論文の作成手順について＞

昨年度の反省を踏まえ、各学生には昨年度より早い段階で修士論文のテーマを考えさせ、さらにICHARM の専門研究員を副査として配置し、修士論文に対する十分な時間や指導体制を整えた。その甲斐もあり、1 名はぎりぎりのレベルでの合格判定となったが、昨年度より比較的スムーズに論文作成を行わせることが出来た。

修士論文の作成過程においては、必要なデータ提供などの面で各学生が所属機関と連携・連絡を十分にとる必要があり、所属機関にも当事者意識をいかに持たせるかが課題である。本コースは、組織としての対応能力向上を目的とした「課題解決型研修」としての特徴を有しているが、この実現のためには学生所属機関の深い理解と協力が不可欠であり、単なる研修生の人材育成にとどまらず、所属機関の長まで巻き込んだ取り組みが必要である。

＜アクションプランについて＞

アクションプランについては、修士論文提出後に本格的に着手したため、帰国日までにあまり時間がなく、作成に時間が割けなかった。また、アクションプランに含むべき内容として事前に説明をしたつもりであったが、せっかく時間をかけて作成した修士論文の内容とつながりのないアクションプランを作成した者が複数おり、次年度以降は Individual Study の一環に組み込むなど、対策が必要である。

また、アクションプランをより現実的なものとするため、アクションプラン作成時に出身組織との連絡を課したり、半年後や 1 年後のフォローアップも行うべきであろう。

＜帰国後のフォローアップについて＞

本コースの目的としては、社会的要請に必要な最新の技術を持ち合わせている専門家を養成し、その結果、一国の計画における災害マネジメントの重要性を彼らが政策決定者に提示することができるようにすることを掲げている。これらは、一朝一夕に出来るものではなく、帰国後も継続して学生のフォローアップを行う必要がある。現在でも、帰国後においても ICHARM Newsletter を配信したりしているが、研修員との繋がりを保ち続けるためには、さらなる取り組みを検討する必要があると考える。

Chapter 6:　終わりに

6.1　本コースで得られた成果

ICHARM では「研修活動」は、「研究活動」・「情報ネットワーク活動」と並ぶ三本柱の一つに位置づけている。

このたび、本コース 3 期目を無事に終了したことで、ICHARM に研修企画・運営のノウハウがさらに蓄積されたことはもちろん、学生の修士論文作成を通じて対象国の水関連問題の解決にも資することになり、ICHARM が活動のキーワードとしている”Localism”への契機となっている。

また、本コースは、「情報ネットワーク活動」にも大きく寄与している。すなわち、学生の所属する組織とのつながりが毎年太くなり、様々な面で現地の状況が見えるようになってきた。学生を通じたこのような国際的なネットワーク形成活動は、ICHARM が実施している他の活動に対しても大いに役立っており、研修終了後も密に連絡を取れる体制を継続することが求められる。

6.2　本コースの意義

JICA 評価会アンケートでは、学生が帰国後に、本コースで得られた知識や技術を役に立てることは出来るかどうか尋ねている。その結果、「業務に直接活用することが出来る」（3 名）、「直接的に活用することはできないが、業務に応用できる」（5 名）、「直接的に活用、応用することはできないが、自分自身の参考になる。」（2 名）との回答であった（無回答 1 名）。

また、研修の成果を帰国後活用するのは易しいかについても尋ねてみた。その結果、「とても易しい」（2 名）、「まあまあ易しい」（4 名）、「あまり易しくない」（5 名）であった。その理由としては、「自分が意志決定の権限を有していないため」（5 名中 5 名）、「活用に必要となる予算の確保が難しいため」（5 名中 4 名）、「日本の経験が自国の状況と大きく相違しているため」（5 名中 4 名）であった。

しかしながらこれらの回答は予想の範囲内である。コース最後の JICA 閉講式の場において、当コースの統括責任者でもある竹内教授（ICHARM センター長）は、餞として「日本で学んだことは帰国後すぐに役に立たないかも知れない、しかし忍耐強く頑張れ」との言葉を学生に述べている。各学生は、日本で 1 年間修士課程を修めた者として、自国ではエリートとして扱われるかも知れないが、組織の一員として働いている以上、すぐには自分の学んだ知識を活用出来ないかも知れない。それでも、1 年間の修士課程で学んだ内容の少しでも、彼らの業務に役立てることが出来れば、引いては彼らの国の水災害被害軽減にも貢献することが出来る。これから数年、あるいは数十年と時間はまだまだかかるかも知れないが、本コースの実施によって、着実に彼らの国の水災害被害軽減に貢献できることを期待する。

6.3　卒業生からのメッセージ

最後に 12 名のうち 8 名から寄せられた卒業生のメッセージを掲載する。

氏名	メッセージ
Partha Pratim Saha (Bangladesh) 	This Master's course is a very effective course for the professional engineers who deal with water related disasters. Apart from the classes this course includes many study tours at different water related structures of Japan which gives the participants an idea about the disaster history and the mitigation measures taken by Japan. Participants can attend many Research and Development seminars arranged by ICHARM. This is also a good opportunity to learn about water related problems around the world. As a participants of this course I have learn a lot which will be very fruitful for my future career. I hope future participants will extract as much as possible from this course and will contribute to the respective country after completion of this course.
A.K.M. Saifuddin (Bangladesh) 	ICHARM provides world class education to us. Its teaching faculty consists of excellent academics with long track record of teaching and research. ICHARM also arranges classes conducted by renowned professor and researchers of different universities and research organizations. The researchers working at ICHARM are very friendly and always eager to cooperate with the students. ICHARM also hosts Research and Development Seminar regularly where famous researchers around the world share their latest findings and thoughts with the audience.　ICHARM provided online access to e-journals, arranged software and gave all out support for research during the individual study. The supervisors and advisors were constantly guiding and supervising the progress of the students. ICHARM was always ready to solve any problems the students might have through discussion in Homeroom and also individual communication. The warm behavior of ever smiling ICHARM officials impressed all of the students. For me, for the last one year this ICHARM became a home away from home. I am grateful to ICHARM for expanding the horizon of my knowledge and I am proud to say that I belong to this excellent organization. I wish ICHARM a bright future.
Gong Zhen Bin (China) 	This course is a great course that has a very successful combination between theory study and field trips. From this course, I learned not only fundamental hydrology and hydraulic knowledge, but also a lot of practical techniques on flood control and flood risk management. It will be quite useful for my career. I have a small suggestion that after we finish the fundamental theory study, such as hydrology, hydraulic, ICHARM can separate us into different groups according to our major, such as dam, sabo, flood risk management, forecast, etc. and designate different researchers that focus on different subjects. The participants also can choose their favorite subjects. I think it will be better for us to focus on our job in the future.

Nay Myo Lin (Myanmar) 	Having such a long history or recurrent flood disasters due to the natural conditions, Japan has developed knowledge and technologies. In Myanmar, we are mostly suffered from flood disasters among the various disasters. It is the largest barrier for developing country to build up developed country. Gaining the specific knowledge about the basic concepts of integrated flood risk management in structural and other non-structural measures, GIS application, advanced hydrology and hydraulic, disaster management policy and also Japan's flood control strategies with advanced technical know-how and experience can practically utilize in implementation of disaster mitigation work in my country. I am thankful to JICA, ICHARM and GRIPS for giving me such a learning opportunity and support of this study. I extend my grateful thanks to ICHARM staff and JICA staff. All of them have been doing their utmost effort to provide us with great help for our studying and living here in Japan.
Vidi Bhuwana (Indonesia) 	I considered myself very lucky to have a chance to join the program. I and other participants were taught by experienced, professional and reputable lectures in their fields. The given modules were also appropriate and adequate to the course as solutions oriented program. And not only lectures, participants were also gained experiences from field trip. So, only within one year, there were so much information, knowledge and experiences which will be very useful to my future career. Upon returning to my country, I will not hesitate to share them with all my colleagues. And for the next participants who will join this course, I hope you can take the most advantage of this course. There are so many experiences and knowledge for you to dig together with this course !!
Jerry Austria Fano (Philippines) 	This course is a very significant program that gave us students many ideas about the solutions to flood-related disasters based on Japan's experiences and allowed us to understand the broad spectrum of flood disaster mitigation. The distinguished professors in ICHARM with their scholarly advice always challenged us to enhance our problem-solving capability – by allowing us to focus more on practical rather than the theoretical aspects. Personally, this will enhance my capability to meet the myriad challenges of flooding, which I can effectively and efficiently contribute in the planning and implementation of flood disaster mitigation plans in my work in the Philippines. So to the incoming students of this 4th batch of master course: study diligently, work hard on your thesis and above all enjoy the learning experience that is ahead of you!
Somchit Amnatsan (Thailand) 	One year in Japan, it is a long period for me to stay abroad. However, the kind hospitality of Japanese people and ICHARM members makes me feel not much different from staying in my home country, Thailand. Within this valuable period, I have learned many things in both academic and social sides. In academic side, ICHARM have provided me a very useful knowledge and experience which is adaptable to solve flood-related problem in my country. On this occasion, I would like to leave my message to next year participants that you are very lucky persons to join this training course. Please try to learn and do best in your study. You will finally find that all knowledge you gain is useful for you and your country.

Shiro Hishinuma (Japan) 	This master course is tough. We have been stretched through lectures, exercises, field visits, and individual study. However, I'm sure that all the requirements have developed our capacity of water related disaster management. This master course is unique. Participants from different countries gather in Japan and spend one year. Discussion with other participants helps me understand diversity. This master course is being improved. I appreciate that ICHARM staffs always try to improve contents and learning environment of the master course based on our feedback. To new comer friends, I leave a message that participating in this master course must be an investment for your future and your country's future. Study hard and enjoy Japan!

～謝辞～

本コースは3年目を迎え、過去の反省を踏まえて全体スケジュールやカリキュラムの見直しを行い、学生の学習内容および学習環境についても、より充実を図ってまいりました。しかしながら、まだまだ改善すべき点は多く残されており、皆様のご意見を頂ければ幸いです。

最後になりましたが、本コースを実施するにあたり、多忙な中講義や演習を行って頂いた各外部講師や行政関係者の方々、現地視察を快く引き受けて頂いた国土交通省事務所ならびに市町村の方々や住民の方々に厚くお礼申し上げます。

－参考資料－

参考資料 1-1

学生名簿

Participant List of "2009-2010 Water-related Disaster Management of Disaster Management Policy Program

平成21年度「防災政策プログラム　水災害リスクマネジメントコース
（洪水関連災害防災専門家育成研修）」 研修員名簿

No.	写真	国	名前	現職
1		Bangladesh バングラデシュ	Partha Pratim Saha 【パタ】	Sub-Divisional Engineer / Bangladesh Water Development Board 技師補：バングラデシュ水開発委員会
2		Bangladesh バングラデシュ	A.K.M. Saifuddin 【サイフ】	Sub-Divisional Engineer / Flood Forecasting & Warning Centre, Bangladesh Water Development Board 技師補：バングラデシュ水開発委員会　洪水予報・警報センター
3		China 中国	Gong Zhen Bin 【ゴン】	Weather Forecast Service Engineer / Fuzhou Meteorological Bureau 天気予報技官：Fuzhou気象局
4		Ethiopia エチオピア	Zinash Mekonnen Zewde 【ジナシ】	Head of Hydrology Office, Hydrology Department / Ministry of Water Resource 室長：水資源省水文局アジスアババ水文室
5		Indonesia インドネシア	Vidi Bhuwana 【ビディ】	Staff of Directorate of Water Resources Management / Directorate General of Water Resources,Ministry of Public Works 水資源管理局スタッフ：公共事業省水資源局
6		Indonesia インドネシア	R. Panji Satrio 【パンジ】	Chief of Subsection, East Java Irrigation at Bengawan Solo River / Watershed, Directorate General of Watershed Resources, Ministry of Public Works ベンガワン・ソロ川東ジャワ灌漑支室長、公共事業省ベンガワン・ソロ川流域水資源管理局
7		Indonesia インドネシア	Gunawan Suntoro 【グナワン】	Staff, Program and Evaluation Division / Ministry of Works、Serayu Opak Basin Organization スタッフ：公共事業省セラユ・オパック流域機構　計画・評価局
8		Myanmar ミャンマー	Nay Myo Lin 【ネイ】	Assistant Engineer, Irrigation Department / Ministry of Agriculture and Irrigation 技師補：農業灌漑省灌漑局
9		Philippines フィリピン	Jerry Austria Fano 【ジェリ】	Engineer III (Assistant Section Chief) , Flood Control & Sabo Engineering Center / Department of Public Works and Highways 技師Ⅲ：公共事業・高速道路省洪水管理・砂防工学センター研究開発部
10		Sri Lanka スリランカ	Seenipellage Chaminda Sugeeswara 【スギーシェワラ】	Divisional Irrigation Engineer / Department of Irrigation 灌漑技師：灌漑局
11		Thailand タイ	Somchit Amnatsan 【ソムチット】	Chief of Water Management Branch(Irrigation Engineer), Regional Irrigation Office2/Operation and Maintenance Division / Royal Irrigation Department 水管理支局長（灌漑技師）：国立灌漑省運営・保守管理局地域灌漑室２
12		Japan 日本	Shiro Hishinuma 【菱沼志朗】	Engineer / Nippon Koei Co., Ltd. 技師：日本工営

参考資料 2-1
コース全体詳細日程表

Time Table

Lecture（Lecturer）

- (1) Basic Hydrology（Prof. JAYAWARDENA）
- (2) Hydraulics（Prof. Ishikawa）
- (3) Basic Concepts of Integrated Flood Risk management (IFRM)（Prof. Kuniyoshi Takeuchi）
- (4) Local Disaster Management and Hazard Mapping（Prof. Shigenobu Tanaka）
- (5) Advanced Hydrology（Prof. JAYAWARDENA）
- (6) Flood Hydraulics and Sediment Transport（Prof. Shoji Fukuoka）
- (7) Mechanics of Sediment Transportation and River Changes（Prof. Shinji Egashira）
- (8) Sustainable Reservoir Development & Management（Prof. Norihisa Matsumoto）
- (9) Control Measures for Landslide & Debris Flow（Prof. Shun Okubo）
- (10) Disaster Mitigation Policy（Prof. Shigeru Morichi）
- (11) Disaster Risk Management（Prof. Kenji Okazaki）

Excercise（Lecturer）

- (1)P Computer Programming（Prof. Tanaka）
- (2)P Practice on Hydraulics（Prof. Ishikawa）
- (3)P Practice on Inundation Analysis（Prof. Tanaka）
- (4)P Practice on Hazard Mapping（Prof. Tanaka）
- (5)P Practice on Advanced Hydrology（Prof. JAYAWARDENA）
- (6)P Practice on Flood Forecasting（Asso. Prof. Fukami）
- (7)P Practice on Sustainable Reservoir Development & Management
- (8)P Practice on Control Measures for Landslide & Debris Flow

October

	Sun.	Mon.	Tue.	Wed.	Thu.	Fri.	Sat.
	10/4	5	6	7	8	9	10
1st class 9:00-10:30		9:30-14:00 Entrance Ceremony at GRIPS	(1)-1 Basic concepts of the Hydrological Cycle — Prof. Jaya	(6)-1 Outline, planning and administration of rivers — Prof. Fukuoka	11:00-11:40 Entrance Ceremony at ICHARM	(6)-3 Steady quasi-two dimensional analysis of Flood flow (2) — Prof. Fukuoka	
2nd class 10:45-12:15		(move to ICHARM)	(1)-2 Precipitation	(6)-2 Steady quasi-two dimensional analysis of Flood flow (1)	11:45-13:00 Opening Party at ICHARM Hall	(6)-4 Unsteady quasi-two-dimensional analysis of flood flows(1)	
3rd class 13:15-14:45			13:15-15:30 Presentation on Inception Report (20 min. * 6 participant)	13:15-15:30 Presentation on Inception Report (20 min. * 6 participant)	(3)-1 Outline of integrated flood risk management (1) — Prof. Takeuchi	(3)-2 Outline of integrated flood risk management (2) — Prof. Takeuchi	
4th class 15:00-16:30		16:00-17:45 Course Orientation — Prof. Takeuchi			(1)-3 Extreme weather — Prof. Jaya		
	11	12	13	14	15	16	17
1st class 9:00-10:30			(6)-5 Unsteady quasi-two-dimensional analysis of flood flows(2) — Prof. Fukuoka	(1)-4 Runoff — Prof. Jaya	Field Trip (1) to Kanto Region	9:00-11:35 Introduction on ICHARM Activities	
2nd class 10:45-12:15			(6)-6 Prediction method of flow resistance in rivers with compound channels and application to river course design(1)	(1)-5 Peak discharge estimation			
3rd class 13:15-14:45			13:15-14:00 Introduction of PWRI & ICHARM 14:15-15:00 Instruction on how to use NILIM Library	13:15-14:00 Leccture on "how to write Master's thesis"		(1)-6 Concept of rainfall excess — Prof. Jaya	
4th class 15:00-16:30						(1)-7 Unit Hydrograph Methods I	
	18	19	20	21	22	23	24
1st class 9:00-10:30		(3)-3 Disaster management cycle — Prof. Takeuchi	(1)-12 Probability and statistics in hydrology I — Prof. Jaya	Project Cycle Management (1)	Project Cycle Management (2)	Project Cycle Management (3)	
2nd class 10:45-12:15		(3)-4 Basic concepts of IFRM (1)	(1)-9 Remote sensing in Hydrology — Mr. Fukami				
3rd class 13:15-14:45		(1)-8 Unit Hydrograph Methods II — Prof. Jaya	(1)-13 Probability and statistics in hydrology II — Prof. Jaya			(1)P-1 Programming Language (1) — Dr. Hai & Dr. Rajapakse	
4th class 15:00-16:30						(1)P-2 Programming Language (2)	
	25	26	27	28	29	30	31
1st class 9:00-10:30		(6)-7 Prediction method of flow resistance in rivers with compound channels and application to river course design(2) — Prof. Fukuoka	(6)-9 Predicting flood flow and bed variation from changes in the sediment environment—Practical issues and research directions (2) — Prof. Fukuoka		(3)-5 Basic concepts of IFRM (2) — Prof. Takeuchi	(1)-14 Basic concepts of Stochastic Hydrology — Prof. Jaya	
2nd class 10:45-12:15		(6)-8 Predicting flood flow and bed variation from changes in the sediment environment—Practical issues and research directions (1)	(1)P-3 Programming Language (3) — Dr. Hai & Dr. Rajapakse	(2)-1 Fundamentals — Prof. Ishikawa	(3)-7 Japanese experiences	(2)P-1 Mathematic 1 (Ordinary Differential equations)	
3rd class 13:15-14:45		Medical checkup by JICA	PWRI Laboratory Tour (tentative)	(2)-2 Advection and Diffusion	(1)P-4 Programming Language (4) — Dr. Hai & Dr. Rajapakse	(2)P-2 Mathematic 2 (Partial Differential equations) — Dr. Yorozuya	
4th class 15:00-16:30				(2)-3 General transport equations		(2)P-3 review of Advection and Diffusion	

November

	11/1	2	3	4	5	6	7
1st class 9:00-10:30		(1)P-5 Programming Language (5) Dr. Hai & Dr. Rajapakse			(6)-10 1-D Bed Deformation Computing Model Dr. Watanabe	(1)P-7 Numerical Computation (2) Dr. Hai & Dr. Rajapakse	
2nd class 10:45-12:15		(1)P-6 Numerical Computation (1)		(2)-4 One dimensional energy equation	(6)-11 2-D Bed Deformation Sand Waves and Bars, Meandering	Homeroom	
3rd class 13:15-14:45		(7)-1 Introduction (Physical property of sediment particles and sediment layer) Prof. Egashira		(2)-5 Basic characteristics of one dimensional flow-1 Prof. Ishikawa	(2)P-4 review of General transport equations Dr. Yorozuya	(1)-10 Satellite observation of rainfall (1) Dr. Kubota, Dr. Tanaka (JAXA)	
4th class 15:00-16:30		(7)-2 Introduction (Sediment transportation)		(2)-6 Basic characteristics of one dimensional flow-2	(2)P-5 review of One dimensional energy equation	(1)-11 Satellite observation of rainfall (2)	

	8	9	10	11	12	13	14
1st class 9:00-10:30		(6)-12 Vegetation Flow in Vegetated Zone Dr. Watanabe	9:15-12:00 Presentation on Inception Report by LDMP trainees	(4)-14 Human behavior and social psychology Prof. Hayashi	(4)-5 9:30-11:00 Communication system of flood information in Japan (1) Kanto Regional Bureau of		
2nd class 10:45-12:15		(6)-13 River restoration based on sediment transport and vegetation on stabilized bars		(4)-3 Flood fighting law and some water levels for evacuation criteria Mr. Kudo (ICHARM)		10:30-12:00 Communication system of flood information in Japan (3) Japan Meteorological Agency (JMA)	
3rd class 13:15-14:45			(4)-1 Outline of disaster prevention countermeasures in Japan Prof. Tanaka (ICHARM)	(4)-4 Outline of flood hazard map and evacuation plan Prof. Tanaka (ICHARM)	(4)-7 13:00-14:30 Communication system of flood information in Japan (2) Tone River Upstream Work Office	13:00-13:30 Visit to MLIT HQs	
4th class 15:00-16:30			(4)-2 River information and early warning system in Japan Mr. Kudo (ICHARM)	(4)-6 Outline of local disaster management plan Prof. Tanaka (ICHARM)	15:00-16:30 Town Watching in Kurihashi Town	16:00-17:00 Effort for effective use of FHM (1) Adachi Ward, Tokyo	

	15	16	17	18	19	20	21
1st class 9:00-10:30		Field Trip (2) to Chubu Region	(4)-8 9:00-10:30 Countermeasures for vulnerable people Mie prefectural government office		Group discussion	(4)-11 Flood directive in Europe -Water, Climate Change and Coastal Lowlands: impacts and adaptation with examples from Europe- Prof. Meulen (UNESCO-IHE)	
2nd class 10:45-12:15		7:25 Tsukuba Sta.-> 8:40 Tokyo Sta. -> (Nozomi213) -> 10:24 Nagoya Sta.	11:00-11:30 Field Trip to Kumodu River	(4)-9 10:00-11:00 Community based disaster management (2) in Ohminato	Group Presentation	10:45-11:30 Special Lecture "Cultural aspects of Water and Climate throughout the world" Mr. Rien van Zetten	
3rd class 13:15-14:45		11:00-12:30 Field Trip to Syonai River	(move)	(4)-10 11:00-12:00 Disaster imagination game (DIG)	**Free Discussion with ICHARM Staff**	Field Trip to hydrological observatory around Kokai River	
4th class 15:00-16:30		13:30-15:00 Courtesy Visit and Lecture on effort for effective use of FHM (2) Kiyosu City, Aich Prefecture	(4)-9 13:00-14:00 Community based disaster management (1) in Enza	13:00-15:00 Town Watching in Ohminato			
		16:00-17:00 Kiso River National Park (Stay in Tsu City)	14:30-15:00 Courtesy Visit to Ise City	15:52 Ujiyamada →20:32 Tsukuba			
			(4)-7 15:00-16:30 Communication system of flood information in Japan Ise City (Stay in Ise City)				

	22	23	24	25	26	27	28
1st class 9:00-10:30			(1)P-8 Numerical Computation (3)	(6)P-1 Introduction of GFAS/IFAS		(7)-3 Mechanics of sediment transportation Prof. Egashira	
2nd class 10:45-12:15			(1)P-9 Numerical Computation (4) Dr. Hai & Dr. Rajapakse	(4)-15 Discussion on local disaster management plan ICHARM	(3)-8 Global trends (1) -Impact of climatic change- Prof. Oki	(7)-4 Mechanics of sediment transportation	
3rd class 13:15-14:45			(1)P-10 Numerical Computation (5)	(4)-13 Geomorphology around rivers and alluvial plain Prof. Umitsu	(2)-7 Quiz (1)		
4th class 15:00-16:30							

	29	30	12/1	2	3	4	5
1st class 9:00-10:30					Field Trip (3) to Kanto Region		
2nd class 10:45-12:15		(1)-15 Examination	(1)P-12 Numerical Computation (7) Dr. Hai & Dr. Rajapakse	(5)P-1 Exercises on System function estimation Prof. Jaya	(3)-10 Urban flood risk management (1) Mr. Imbe	(2)P-7 discussion about Quiz 1 Dr. Yorozuya	
3rd class 13:15-14:45		(1)P-11 Numerical Computation (6) Dr. Hai & Dr. Rajapakse	(3)-12 Effects of forests Prof. Onda	(5)P-2 Exercises on least squares estimation	(3)-11 Urban flood risk management (2) Mr.Imbe	(7)-5 Mechanics of sediment transportation Prof. Egashira	
4th class 15:00-16:30		(5)-1 Hydrological modelling – basic concepts and approaches Prof. Jaya	(5)-2 Systems theory approach I – Linear theory; Time domain analysis: Prof. Jaya		(3)-15 Field Trip Mr.Imbe	(7)-6 Mechanics of sediment transportation	

	6	7	8	9	10	11	12
1st class 9:00-10:30			(1)P-13 Numerical Computation (8)			(6)-14 Re-meandering project for river restoration Dr. Watanabe	
2nd class 10:45-12:15		**Free Discussion with ICHARM Staff**	(1)P-14 Numerical Computation (9) Dr. Hai & Dr. Rajapakse	(2)-8 Momentum conservation, Hydraulic jump, Flow junction	2009 ICHARM QUICK REPORT	(6)-15 Bank erosion and drift woods	
3rd class 13:15-14:45			(1)P-15 Numerical Computation (10)	(2)-9 Composite channel flow, Secondary flow Prof. Ishikawa	Symposium	(2)P-6 review of Basic characteristics of one dimensional flow-1 & 2 Dr. Yorozuya	
4th class 15:00-16:30				(2)-10 Numerical simulation of river flows		(2)P-8 review of Momentum conservation, Hydraulic jump, Flow junction	

ANNEX - 6

December

	13	14	15	16	17	18	19
1st class 9:00-10:30		**9:30-10:30 Special Lecture by Dr. Md Abu Taher Khandakar (BWDB)**	(6)P-5 Validation of satellite-based rainfall ICHARM	(6)P-9 Run-off analysis using IFAS (3) Model building ICHARM	(6)P-12 Run-off analysis using IFAS (6) Validation of calculated discharge ICHARM		
2nd class 10:45-12:15		(6)P-2 Course Introduction ICHARM	(6)P-6 Main functions of IFAS ICHARM	(6)P-10 Run-off analysis using IFAS (4) Parameter estimation ICHARM	(6)P-13 Run-off analysis using IFAS (7) Validation of calculated discharge ICHARM		
3rd class 13:15-14:45		(6)P-3 Applicability of the satellite-based rainfall JAXA	(6)P-7 Run-off analysis using IFAS (1) Data import ICHARM	(6)P-11 Run-off analysis using IFAS (5) Parameter calibration ICHARM	(6)P-14 Run-off analysis using IFAS (8) Application to actual basins ICHARM	(7)-7 River morphology Prof. Egashira	
4th class 15:00-16:30		(6)P-4 Correction method of the satellite-based rainfall ICHARM	(6)P-8 Run-off analysis using IFAS (2) Model building ICHARM	**Special Lecture on IWRM**	(6)P-15 Main functions of GFAS Mr. Matsuki (IDI)	(7)-8 River changes	

	20	21	22	23	24	25	26
1st class 9:00-10:30		(5)-3 Systems theory approach II – Non-linear systems, multi-linear systems Prof. Jaya	**1st Interim Presentaiton**		(3)-6 Basic concepts of IFRM (3) Dr. Yoshii		
2nd class 10:45-12:15		(5)-4 Instantaneous Unit Hydrograph (IUH)			(3)-9 Global trends (2) -International actions- Prof. Oki		
3rd class 13:15-14:45					(5)P-3 Exercises on Impulse and Frequency Response Functions Prof. Jaya		
4th class 15:00-16:30			**Homeroom**		(5)P-4 Exercises on IUH determination		

	27	28	29	30	31	1/1	2
1st class 9:00-10:30							
2nd class 10:45-12:15							
3rd class 13:15-14:45							
4th class 15:00-16:30							

	3	4	5	6	7	8	9
1st class 9:00-10:30							
2nd class 10:45-12:15					(3)-13 Project assessment (1) Dr. Wakigawa	**Rivers in Japan** Mr. Kudo	
3rd class 13:15-14:45					(3)-14 Project assessment (2)	(7)-9 River morphology Prof. Egashira	
4th class 15:00-16:30						(7)-10 Local scouring	

January

	10	11	12	13	14	15	16
1st class 9:00-10:30				Tsukuba Univ. Library			
2nd class 10:45-12:15			(5)-5 Conceptual models of IUH Prof. Jaya		(5)-7 Rainfall-runoff modelling I – Conceptual type Prof. Jaya	(5)-8 Rainfall-runoff modelling II – Physics-based type Prof. Jaya	
3rd class 13:15-14:45			(5)P-5 Exercises on IUH application	(5)-6 Synthetic Unit Hydrograph Prof. Jaya	(5)P-7 Exercises on a typical rainfall-runoff model II	(5)P-1 GIS(1) Dr. Magome	
4th class 15:00-16:30				(5)P-6 Exercises on a typical rainfall-runoff model I		(5)P-2 GIS(2)	

	17	18	19	20	21	22	23
1st class 9:00-10:30						(5)P-3 GIS(3) Dr. Magome	
2nd class 10:45-12:15		(3) Examination	(5)P-8 Exercises on flood routing Prof. Jaya		**2nd Interim Presentaiton**	(5)P-4 GIS(4)	
3rd class 13:15-14:45		(7)-11 Reservoir sedimentation and associated issues Prof. Egashira	(5)-9 Introduction to Hydroinformatics			(7)-13 Sediment management in drainage basins Prof. Egashira	
4th class 15:00-16:30		(7)-12 Sediment management in drainage basins			**Homeroom**	(7)-14 Comprehensive sediment management	

February

	24	25	26	27	28	29	30
1st class 9:00-10:30		(11) Disaster Risk Management at GRIPS	(11) Disaster Risk Management at GRIPS	(11) Disaster Risk Management at GRIPS	(11) Disaster Risk Management at GRIPS	Field Trip to Nagoya & Kyoto	
2nd class 10:45-12:15		(11) Disaster Risk Management at GRIPS	(11) Disaster Risk Management at GRIPS	(11) Disaster Risk Management at GRIPS	(11) Disaster Risk Management at GRIPS		
3rd class 13:15-14:45		(10) Disaster Mitigation Policy at GRIPS	(10) Disaster Mitigation Policy at GRIPS	(10) Disaster Mitigation Policy at GRIPS	(10) Disaster Mitigation Policy at GRIPS		
4th class 15:00-16:30		(10) Disaster Mitigation Policy at GRIPS	(10) Disaster Mitigation Policy at GRIPS	(10) Disaster Mitigation Policy at GRIPS	(10) Disaster Mitigation Policy at GRIPS		

	31	1	2	3	4	5	6
1st class 9:00-10:30		(10) Disaster Mitigation Policy at GRIPS	(10) Disaster Mitigation Policy at GRIPS	(10) Disaster Mitigation Policy at GRIPS	(10) Disaster Mitigation Policy at GRIPS	(10) Disaster Mitigation Policy at GRIPS	
2nd class 10:45-12:15		(10) Disaster Mitigation Policy at GRIPS	(10) Disaster Mitigation Policy at GRIPS	(10) Disaster Mitigation Policy at GRIPS	(10) Disaster Mitigation Policy at GRIPS	(10) Disaster Mitigation Policy at GRIPS	
3rd class 13:15-14:45		(11) Disaster Risk Management at GRIPS	(11) Disaster Risk Management at GRIPS	13:30-17:00 Special Lecture at Cabinet Office	(11) Disaster Risk Management at GRIPS	(11) Disaster Risk Management at GRIPS	
4th class 15:00-16:30		(11) Disaster Risk Management at GRIPS	(11) Disaster Risk Management at GRIPS		(11) Disaster Risk Management at GRIPS	(11) Disaster Risk Management at GRIPS	

	7	8	9	10	11	12	13
1st class 9:00-10:30		(5)P-9 Exercises on Kalman filtering I — Prof. Jaya		(8)-2 Flood Control Plan — Dr. Umino		(Holiday)	
2nd class 10:45-12:15		(5)-10 Flood routing – Muskingam method; Muskingam-Cunge method — Prof. Jaya	(5)P-10 Exercises on Kalman filtering II — Prof. Jaya	(8)-3 Flood Control Operation — Dr. Umino			
3rd class 13:15-14:45		(8)-1 Outline of Dam Engineering — Dr. Sakamoto	(9)-1 Outline of sediment-related disasters — Prof. Okubo	(5)-11 Kalman Filtering — Prof. Jaya			
4th class 15:00-16:30			(9)-2 Introduction to sabo projects — Prof. Okubo				

	14	15	16	17	18	19	20
1st class 9:00-10:30			(8)-5 Latest Technology for Concrete Dam (1) — Prof. Kawasaki		(5)-12 Frequency analysis — Prof. Jaya		
2nd class 10:45-12:15		(7)-15 Examination — Prof. Egashira	(8)-6 Latest Technology for Concrete Dam (2) — Prof. Kawasaki		(5)P-12 Exercises on Frequency analysis II — Prof. Jaya	(8)-8 Environmental Impact of Dams (2) — Prof. Sumi	
3rd class 13:15-14:45		(9)-3 Countermeasures for sediment-related disasters — Prof. Ishikawa	(5)P-11 Exercises on Frequency analysis I — Prof. Jaya	(8)-7 Environmental Impact of Dams (1) — Dr. Amano	(9)-4 Hazard mapping for sediment-related disasters — Dr. Takanashi	(8)-9 Sediment Management in Reservoirs (1) — Prof. Sumi	
4th class 15:00-16:30		(8)-4 Seismic Design for Dams — Prof. Kawasaki	Water level observation using S&DL mini (15:00-15:30) — Mr.Kanno			(8)-10 Sediment Management in Reservoirs (2) — Prof. Sumi	

	21	22	23	24	25	26	27
1st class 9:00-10:30		(8)-11 Dam Construction (1) — Dr. Yamaguchi		(8)-13 Dam Management — Dr. Yamaguchi	(9)-9 Application of sabo works and landslide countermeasures to overseas countries — Mr. Watanabe	(9)-11 Characteristics and topography of landslides — Dr. Ishii	
2nd class 10:45-12:15		(9)-5 Comprehensive sediment-related disaster measures — Prof. Okubo	(2)-12 River sedimentation-1 — Prof. Ishikawa	(9)-8 Volcanic sabo works — Ass.Prof. Yamada	(9)-10 Introduction of landslides — Mr. Yoshimatsu	(9)-12 Stability analysis for landslide — Dr. Tsunaki	
3rd class 13:15-14:45		(9)-6 Countermeasures for earthquake-induced natural dams — Dr. Osanai	(2)-13 River sedimentation-2 — Prof. Ishikawa	(9)-7 Sabo works in arid area and reforestation of degraded lands — Dr. Ikeya	(5)P-5 GIS(5) — Dr. Magome	(5)P-13 Exercises on Frequency analysis III — Prof. Jaya	
4th class 15:00-16:30			(2)-14 Density currents in estuaries — Prof. Ishikawa	(8)-12 Dam Construction (2) — Dr. Kashiwai	(5)P-6 GIS(6) — Dr. Magome	(5)-13 Parameter estimation — Prof. Jaya	

	28	1	2	3	4	5	6
1st class 9:00-10:30		(9)-13 Survey and emergency response for landslide — Dr. Fujusawa	(9)P-10 — Dr. Takanashi	(5)P-7 GIS(7) — Dr. Magome			
2nd class 10:45-12:15		(8)-14 Effective Use of Existing Dams — Prof. Matsumoto	(9)P-11 Training of Development of Procedures for Sediment Disaster Warning and Evacuation — Dr. Takanashi	(9)-14 Maintenance measures for roads and reservoirs in landslide areas — Dr. Fujusawa			
3rd class 13:15-14:45		(8)-15 Roles of Dams in 21st Century — Prof. Matsumoto	(9)P-12 — Dr. Takanashi	(9)-15 Permanent measures for landslide damage reduction — Mr. Ishida			
4th class 15:00-16:30		the 24th ICHARM R&D Seminar	(9)P-13 — Dr. Takanashi				

ANNEX - 8

March

	7	8	9	10	11	12	13
1st class 9:00-10:30					(8)P-14 Application of dam projects for other countries — Prof. Matsumoto & Dr. Yamaguchi	(5)P-14 Exercises on parameter estimation — Prof. Jaya	
2nd class 10:45-12:15			(5)-14 Error analysis — Prof. Jaya		(8)P-15	(5)P-15 Exercises on error analysis	
3rd class 13:15-14:45			(9)P-14 Application of sabo/landslide projects for other countries — Dr. Ikeya&Dr. Hara			**the 25th ICHARM R&D Seminar**	
4th class 15:00-16:30			(9)P-15				
	14	15	16	17	18	19	20
1st class 9:00-10:30		Examination — Prof. Fukuoka			(1)P 2-D inundation inundation analysis — Dr. Hai		
2nd class 10:45-12:15			(5)P-8 Inundation analysis (1) — Dr. Osti		(5)P-10 Inundation analysis (3)		
3rd class 13:15-14:45			(5)P-9 Inundation analysis (2)	(2)P-9 review of Composite channel flow, Secondary flow — Dr. Yorozuya	(5)P-11 Inundation analysis (4) — Dr. Osti		
4th class 15:00-16:30				(2)P-10 review of Numerical simulation of river flows	(5)P-12 Inundation analysis (5)		
	21	22	23	24	25	26	27
1st class 9:00-10:30							
2nd class 10:45-12:15			(5)P-13 Inundation analysis (6)		(5)-15 Examination — Prof. Jaya		
3rd class 13:15-14:45			(5)P-14 Inundation analysis (7) — Dr. Osti		Homeroom		
4th class 15:00-16:30			(5)P-15 Inundation analysis (8)				

April

	28	29	30	31	1	2	3
AM						**the 26th ICHARM R&D Seminar**	
PM						15:00-16:30 Cherry blossom viewing	
	4	5	6	7	8	9	10
AM						**3rd Interim Presentation**	
PM							
	11	12	13	14	15	16	17
AM			10:30-12:00 Examination on Local Disaster Management and Hazard — Prof. Tanaka (ICHARM)	**GRASS GIS Training By Prof. Venkatesh Raghavan, Dr. Eugenio Realini**			
PM		13:15-14:45 Additional Lecture on Local Disaster Management and Hazard Mapping — Prof. Tanaka (ICHARM)		10:30-16:30 : 1) GRASS OSGeo4W Installation on Windows 2) Introduction to Free and Open Source Software for Geoinformatics 3) GRASS Database Structure and Format	9:30-16:30 : 1) GRASSeeds Tutorial (Module 1 and 2) 2) GRASSeeds Tutorial (Module 3 and 4)		
	18	19	20	21	22	23	24
AM			Field Trip to Chugoku & Kinki Region				
PM							
	25	26	27	28	29	30	1
AM			Field Survey to Shibukawa (Gunma Prefecture) — Dr. Yorozuya			(Holliday)	
PM		13:15-14:45 review of Composite channel flow, Secondary flow — Dr. Yorozuya; 15:00-16:30 review of Numerical simulation of river flows					

May		2	3	4	5	6	7	8
	AM							
	PM							
		9	10	11	12	13	14	15
	AM							
	PM							Flood Fighting Drill in Tone River
		16	17	18	19	20	21	22
	AM							
	PM					Presentation on report Dr. Yorozuya		
		23	24	25	26	27	28	29
	AM			the 27th ICHARM R&D Seminar	Field Trip to Tohoku & Kanto Region			
	PM							
June		30	31	1	2	3	4	5
	AM					4th Interim Presentation, Homeroom		
	PM							
		6	7	8	9	10	11	12
	AM							
	PM							
		13	14	15	16	17	18	19
	AM					Field Trip to Hokuriku Region		
	PM							
		20	21	22	23	24	25	26
	AM							
	PM							
July		27	28	29	30	1	2	3
	AM						Submission of the 1st draft	
	PM							
		4	5	6	7	8	9	10
	AM							
	PM		Visit to NIED and JAXA					
		11	12	13	14	15	16	17
	AM						5th Interim Presentation	
	PM							
		18	19	20	21	22	23	24
	AM							
	PM							
		25	26	27	28	29	30	31
	AM						Submission of the complete draft	
	PM							
August		1	2	3	4	5	6	7
	AM						Final Presentation	
	PM							
		8	9	10	11	12	13	14
	AM							
	PM							
		15	16	17	18	19	20	21
	AM							
	PM							
		22	23	24	25	26	27	28
	AM		Submission of the thesis to GRIPS					
	PM							
September		29	30	31	1	2	3	4
	AM							
	PM							
		5	6	7	8	9	10	11
	AM			General conference of "Japan Society of Hydrology and Water Resources" at Hosei Univ.				
	PM							
		12	13	14	15	16	17	18
	AM				Farewell Party at ICHARM (Lunch time)	Graduation Ceremony at GRIPS	Closing Ceremony at JICA	Return to home country
	PM							

参考資料 2-2

カリキュラム一覧表

Course Curriculum （Recommended course)

Lecture	Disaster Mitigation Policy		Disaster Risk Management		Basic Hydrology	
Number	DMP200E		DMP201E		DMP280E	
Lecturer	Prof. Shigeru Morichi		Prof. Kenji Okazaki		Prof. Amithirigala Widhanelage JAYAWARDENA	
Period	Winter		Winter		Fall through Winter	
	Lecture	Lecturer	Lecture	Lecturer	Lecture	Lecturer
1	Introduction Coverage of this class Disaster mitigation policy	Prof Morichi, GRIPS	Introduction Disasters in the world	Prof Okazaki, GRIPS	Basic concepts of the Hydrological Cycle; Processes in the Hydrological Cycle	Prof Jayawardena, ICHARM
2	Social systems against disaster	Prof Morichi, GRIPS	International activities for disaster mitigation	Prof Okazaki, GRIPS	Precipitation – Types, measurement and presentation of data	Prof Jayawardena, ICHARM
3	Education on basic knowledge for disasters (1)	Prof Morichi, GRIPS	Japan's policy making	Prof Okazaki, GRIPS	Extreme weather – cyclones, typhoons, hurricanes Evaporation and evapo-transpiration; Infiltration	Prof Jayawardena, ICHARM
4	Education on basic knowledge for disasters (2)	Prof Morichi, GRIPS	Basics of Disaster Risk Management	Prof Okazaki, GRIPS	Runoff – Components, measurement and estimation of runoff	Prof Jayawardena, ICHARM
5	Lessons from tragedies	Prof Hitoshi IEDA,The University of Tokyo	Disaster risk management policies in Japan -1	Prof Okazaki, GRIPS	Peak discharge estimation; Rational Method, Baseflow Separation	Prof Jayawardena, ICHARM
6	Reliability analysis of transportation network	Prof Morichi, GRIPS	Disaster risk management policies in Japan -2	Prof Okazaki, GRIPS	Concept of rainfall excess; Role of infiltration and evaporation	Prof Jayawardena, ICHARM
7	Policy for Transportation Infrastructure	Prof Morichi, GRIPS	Lessons from Hanshin-Awaji Earthquake Disaster	Prof Okazaki, GRIPS	Unit Hydrograph Methods I	Prof Jayawardena, ICHARM
8	Policy for road infrastructure	Dr Shigeki UNJYOU, PWRI	Building regulation	Prof Okazaki, GRIPS	Unit Hydrograph Methods II	Prof Jayawardena, ICHARM
9	Policy for port infrastructure	Mr Hidetoshi KUME, JTERC	Housing safety	Prof Okazaki, GRIPS	Remote sensing in Hydrology	Asso Prof Fukami, ICHARM
10	Policy for airport infrastructure	Prof Morichi, GRIPS	Issues of disaster management	Prof Okazaki, GRIPS	Satellite observation of rainfall (1)	Dr Kubota, Dr Tanaka, JAXA
11	Policy for airport infrastructure	Prof Morichi, GRIPS	Urban development and disaster management	Prof Okazaki, GRIPS	Satellite observation of rainfall (2)	Dr Kubota, Dr Tanaka, JAXA
12	Land use and regulations	Prof Morichi, GRIPS	Community based disaster risk management	Prof Okazaki, GRIPS	Probability and statistics in hydrology I; IDF curves	Prof Jayawardena, ICHARM
13	Policy Making Process	Prof Morichi, GRIPS	Practical risk assessment I	Prof Okazaki, GRIPS	Probability and statistics in hydrology II; Extreme value distribution	Prof Jayawardena, ICHARM
14	Presentation by students and discussion (1)	Prof Morichi, GRIPS	Practical risk assessment II	Prof Okazaki, GRIPS	Basic concepts of Stochastic Hydrology	Prof Jayawardena, ICHARM
15	Presentation by students and discussion (2)	Prof Morichi, GRIPS	Special lecture		Examination	

Lecture	Hydraulics		Basic Concepts of Integrated Flood Risk management (IFRM)		Local Disaster Management and Hazard Mapping	
Number	DMP281E		DMP282E		DMP283E	
Lecturer	Prof. Tadaharu Ishikawa		Prof. Kuniyoshi Takeuchi		Prof. Shigenobu Tanaka	
Period	Fall through Winter		Fall through Winter		Fall through Winter	
	Lecture	Lecturer	Lecture	Lecturer	Lecture	Lecturer
1	Fundamentals (Conservation law, Differential equations)	Prof Ishikawa, Tokyo Institute of Technology	Outline of integrated flood risk management (1) -R=H*V-	Prof Takeuchi, ICHARM	Outline of disaster prevention countermeasures in Japan	Prof Tanaka, ICHARM
2	Advection and Diffusion	Prof Ishikawa, Tokyo Institute of Technology	Outline of integrated flood risk management (2) -PAR model & Flood disaster indices-	Prof Takeuchi, ICHARM	River information and early warning system in Japan	Prof Kudo, ICHARM
3	General transport equations	Prof Ishikawa, Tokyo Institute of Technology	Disaster management cycle	Prof Takeuchi, ICHARM	Flood fighting law and some water levels for evacuation criteria	Prof Kudo, ICHARM
4	One dimensional energy equation	Prof Ishikawa, Tokyo Institute of Technology	Basic concepts of IFRM (1) - IWRM, IRBM and IFRM-	Prof Takeuchi, ICHARM	Outline of flood hazard map and evacuation plan	Prof Tanaka, ICHARM
5	Basic characteristics of one dimensional flow-1 (without energy loss)	Prof Ishikawa, Tokyo Institute of Technology	Basic concepts of IFRM (2) -IWRM at basin scale-	Prof Takeuchi, ICHARM	River management system and flood fighting	Kanto Regional Bureau of MLIT
6	Basic characteristics of one dimensional flow-2 (with energy loss)	Prof Ishikawa, Tokyo Institute of Technology	Basic concepts of IFRM (3) -Public awareness and participation-	Mr Yoshii, CERI	Outline of local disaster management plan	Prof Tanaka, ICHARM
7	Quiz-1		Japanese experiences - Chronological changes-	Prof Takeuchi, ICHARM	Communication system during floods in Japan	Tone River Upstream Work Office
8	Momentum conservation, Hydraulic jump, Flow junction	Prof Ishikawa, Tokyo Institute of Technology	Global trends (1) -Impact of climatic change-	Prof Oki, Tokyo Univ	Countermeasures for vulnerable people	Mr Kamei, Mie Prefecture
9	Composite channel flow, Secondary flow	Prof Ishikawa, Tokyo Institute of Technology	Global trends (2) -International actions-	Prof Oki, Tokyo Univ	Community based disaster management	Mr Ueda, Mr Kanamori, Ise City
10	Numerical simulation of river flows	Prof Ishikawa, Tokyo Institute of Technology	Urban flood risk management (1)	Asso Prof Imbe, ARSIT	Disaster imagination game (DIG)	Mr Kuribayashi, ICHARM
11	Quiz-2		Urban flood risk management (2)	Asso Prof Imbe, ARSIT	Flood directive in Europe	Asso Prof Meulen, UNESCO-IHE
12	River sedimentation-1	Prof Ishikawa, Tokyo Institute of Technology	Effects of forests	Prof Onda, Tsukuba Univ	Geomorphology around rivers and alluvial plain (1)	Prof Umitsu, Nagoya Univ
13	River sedimentation-2	Prof Ishikawa, Tokyo Institute of Technology	Project assessment (1)	Asso Prof Wakigawa, JICE	Geomorphology around rivers and alluvial plain (2)	Prof Umitsu, Nagoya Univ
14	Density currents in estuaries	Prof Ishikawa, Tokyo Institute of Technology	Project assessment (2)	Asso Prof Wakigawa, JICE	Human behavior and social psychology	Prof, Hayashi, Kyoto Univ
15	Examination		Field trip	ICHARM	Discussion on local disaster management plan	ICHARM

Lecture	Advanced Hydrology		Flood Hydraulics and Sediment Transport		Mechanics of Sediment Transportation and River Changes	
Number	DMP380E		DMP381E		DMP382E	
Lecturer	Prof. Amithirigala Widhanelage JAYAWARDENA		Prof. Shoji FUKUOKA		Prof. Shinji Egashira	
Period	Fall through Winter		Fall through Winter		Fall through Winter	
	Lecture	Lecturer	Lecture	Lecturer	Lecture	Lecturer
1	Hydrological modelling – basic concepts and approaches	Prof Jayawardena, ICHARM	Outline of rivers in Japan	Prof Fukuoka, Chuo Univ	Introduction (Physical property of sediment particles and sediment layer)	Prof Egashira, Newjec
2	Systems theory approach I – Linear theory; Time domain analysis; Frequency domain analysis	Prof Jayawardena, ICHARM	Fundamental mechanics of flood flows	Prof Fukuoka, Chuo Univ	Introduction (Sediment transportation)	Prof Egashira, Newjec
3	Systems theory approach II – Non-linear systems, multi-linear systems	Prof Jayawardena, ICHARM	Steady quasi-two dimensional analysis of Flood flow (1)	Prof Fukuoka, Chuo Univ	Mechanics of sediment transportation (1)	Prof Egashira, Newjec
4	Instantaneous Unit Hydrograph (IUH)	Prof Jayawardena, ICHARM	Steady quasi-two dimensional analysis of Flood flow (2)	Prof Fukuoka, Chuo Univ	Mechanics of sediment transportation (2)	Prof Egashira, Newjec
5	Conceptual models of IUH	Prof Jayawardena, ICHARM	Unsteady quasi-two-dimensional analysis of flood flows	Prof Fukuoka, Chuo Univ	Mechanics of sediment transportation (3)	Prof Egashira, Newjec
6	Synthetic Unit Hydrograph	Prof Jayawardena, ICHARM	Unsteady two-dimensional analysis of flood flows	Prof Fukuoka, Chuo Univ	Mechanics of sediment transportation (4)	Prof Egashira, Newjec
7	Rainfall-runoff modelling I – Conceptual type	Prof Jayawardena, ICHARM	Prediction method of flow resistance in rivers with compound channels and application to river course design (1)	Prof Fukuoka, Chuo Univ	River morphology	Prof Egashira, Newjec
8	Rainfall-runoff modelling II – Physics-based type	Prof Jayawardena, ICHARM	Prediction method of flow resistance in rivers with compound channels and application to river course design (2)	Prof Fukuoka, Chuo Univ	River changes (1)	Prof Egashira, Newjec
9	Introduction to Hydroinformatics	Prof Jayawardena, ICHARM	Predicting flood flow and bed variation from changes in the sediment environment—Practical issues and research directions (1)	Prof Fukuoka, Chuo Univ	River changes (2)	Prof Egashira, Newjec
10	Flood routing – Muskingam method; Muskingam-Cunge method	Prof Jayawardena, ICHARM	Predicting flood flow and bed variation from changes in the sediment environment—Practical issues and research directions (2)	Prof Watanabe, Kitami Institute of Technology	Local scouring	Prof Egashira, Newjec
11	Kalman Filtering	Prof Jayawardena, ICHARM	One-dimensional bed deformation, Computing model	Prof Watanabe, Kitami Institute of Technology	Reservoir sedimentation and associated issues	Prof Egashira, Newjec
12	Frequency analysis	Prof Jayawardena, ICHARM	Two dimensional bed deformation, Sand waves and bars, Meandering	Prof Watanabe, Kitami Institute of Technology	Sediment management in drainage basins (1)	Prof Egashira, Newjec
13	Parameter estimation	Prof Jayawardena, ICHARM	Flow in vegetated zone	Prof Watanabe, Kitami Institute of Technology	Sediment management in drainage basins (2)	Prof Egashira, Newjec
14	Errors in frequency analysis	Prof Jayawardena, ICHARM	River restoration based on sediment transport and vegetation on stabilized bars	Prof Watanabe, Kitami Institute of Technology	Comprehensive sediment management	Prof Egashira, Newjec
15	Examination		Re-meandering project for river restoration	Prof Watanabe, Kitami Institute of Technology	Examination	Prof Egashira, Newjec

Lecture	Sustainable Reservoir Development & Management		Control Measures for Landslide & Debris Flow	
Number	DMP383E		DMP384E	
Lecturer	Prof. Norihisa Matsumoto		Prof. Shun Okubo	
Period	Fall through Winter		Fall through Winter	
	Lecture	Lecturer	Lecture	Lecturer
1	Outline of Dam Engineering	Dr Sakamoto, PWRI	Outline of sediment-related disasters	Prof Okubo, Japan Sabo Association
2	Flood Control Plan	Dr Umino, PWRI	Introduction to Sabo projects	Prof Okubo, Japan Sabo Association
3	Flood Control Operation	Dr Umino, PWRI	Countermeasures for sediment-related disasters	Prof Ishikawa, Tokyo University of Agriculture & Technology
4	Seismic Design for Dams	Prof Kawasaki, Yamaguchi Univ	Hazard mapping for sediment-related disasters	Dr Takanashi, Asia Air Survey CO ,LTD
5	Latest Technology for Concrete Dam (1)	Prof Kawasaki, Yamaguchi Univ	Comprehensive sediment-related disaster measures	Prof Okubo, Japan Sabo Association
6	Latest Technology for Concrete Dam (2)	Prof Kawasaki, Yamaguchi Univ	Countermeasures for earthquake-induced natural dams	Dr Osanai, NILIM
7	Environmental Impact of Dams (1)	Dr Amano, NILIM	Sabo works in arid area and reforestation of degraded lands	Prof Ikeya, SABO Technical Center
8	Environmental Impact of Dams (2)	Prof Sumi, Kyoto Univ	Volcanic Sabo Works	Ass Prof Yamada, Mie Univ
9	Sediment Management in Reservoirs (1)	Prof Sumi, Kyoto Univ	Application of Sabo Works and landslide countermeasures to overseas countries	Mr Watanabe, Institute for International Development, Disaster
10	Sediment Management in Reservoirs (2)	Prof Sumi, Kyoto Univ	Introduction of landslides	Mr Yoshimatsu, Institute of Slope Technology
11	Dam Construction (1)	Prof Yamaguchi, PWRI	Characteristics and topography of landslides	Dr Ishii, PWRI
12	Dam Construction (2)	Dr Kashiwai, Japan Dam Engineering Center	Stability analysis for landslide	Dr Tsunaki, SABO Technical Center
13	Dam Management	Prof Yamaguchi, PWRI	Survey and emergency response for landslide	Dr Fujisawa, PWRI
14	Effective Use of Existing Dams	Prof Matsumoto, Japan Dam Engineering Center	Maintenance measures for roads and reservoirs in landslide areas	Dr Fujisawa, PWRI
15	Roles of Dams in 21st Century	Prof Matsumoto, Japan Dam Engineering Center	Permanent measures for landslide damage reduction	Mr Ishida, PWRI

Course Curriculum （Elective course)

Lecture	Computer Programming		Practice on Hydraulics		Practice on Inundation Analysis	
Number	DMP180E		DMP284E		DMP285E	
Lecturer	Mr. Shigenobu Tanaka		Prof. Tadaharu Ishikawa		Mr. Shigenobu TANAKA	
Period	Fall through Winter		Fall through Spring		Fall through Spring	
	Lecture	Lecturer	Lecture	Lecturer	Lecture	Lecturer
1	Programming Language (1)	Asso Prof Hai & Lect Rajapakse, ICHARM	Mathematic 1 (Ordinary Differential equations)	Lect Yorozuya, ICHARM	GIS (1)	Asso Prof Magome, ICHARM
2	Programming Language (2)	Asso Prof Hai & Lect Rajapakse, ICHARM	Mathematic 2 (Partial Differential equations)	Lect Yorozuya, ICHARM	GIS (2)	Asso Prof Magome, ICHARM
3	Programming Language (3)	Asso Prof Hai & Lect Rajapakse, ICHARM	review of Advection and Diffusion	Lect Yorozuya, ICHARM	GIS (3)	Asso Prof Magome, ICHARM
4	Programming Language (4)	Asso Prof Hai & Lect Rajapakse, ICHARM	review of General transport equations	Lect Yorozuya, ICHARM	GIS (4)	Asso Prof Magome, ICHARM
5	Programming Language (5)	Asso Prof Hai & Lect Rajapakse, ICHARM	review of One dimensional energy equation	Lect Yorozuya, ICHARM	GIS (5)	Asso Prof Magome, ICHARM
6	Numerical Computation (1)	Asso Prof Hai & Lect Rajapakse, ICHARM	review of Basic characteristics of one dimensional flow-1 & 2	Lect Yorozuya, ICHARM	GIS (6)	Asso Prof Magome, ICHARM
7	Numerical Computation (2)	Asso Prof Hai & Lect Rajapakse, ICHARM	discussion about Quiz 1	Lect Yorozuya, ICHARM	GIS (7)	Asso Prof Magome, ICHARM
8	Numerical Computation (3)	Asso Prof Hai & Lect Rajapakse, ICHARM	review of Momentum conservation, Hydraulic jump, Flow junction	Lect Yorozuya, ICHARM	Inundation analysis (1)	Asso Prof Osti, ICHARM
9	Numerical Computation (4)	Asso Prof Hai & Lect Rajapakse, ICHARM	review of Composite channel flow, Secondary flow	Lect Yorozuya, ICHARM	Asso Prof Fukami, ICHARM	Asso Prof Osti, ICHARM
10	Numerical Computation (5)	Asso Prof Hai & Lect Rajapakse, ICHARM	review of Numerical simulation of river flows	Lect Yorozuya, ICHARM	Dr Kubota, Dr Tanaka, JAXA	Asso Prof Osti, ICHARM
11	Numerical Computation (6)	Asso Prof Hai & Lect Rajapakse, ICHARM	discussion about Quiz-2	Lect Yorozuya, ICHARM	Dr Kubota, Dr Tanaka, JAXA	Asso Prof Osti, ICHARM
12	Numerical Computation (7)	Asso Prof Hai & Lect Rajapakse, ICHARM	review of River sedimentation-1	Lect Yorozuya, ICHARM	Inundation analysis (5)	Asso Prof Osti, ICHARM
13	Numerical Computation (8)	Asso Prof Hai & Lect Rajapakse, ICHARM	review of River sedimentation-2	Lect Yorozuya, ICHARM	Inundation analysis (6)	Asso Prof Osti, ICHARM
14	Numerical Computation (9)	Asso Prof Hai & Lect Rajapakse, ICHARM	review of Density currents in estuaries	Lect Yorozuya, ICHARM	Inundation analysis (7)	Asso Prof Osti, ICHARM
15	Numerical Computation (10)	Asso Prof Hai & Lect Rajapakse, ICHARM	discussion about Examination	Lect Yorozuya, ICHARM	Inundation analysis (8)	Asso Prof Osti, ICHARM

Lecture	Practice on Local Disaster Management Plan		Practice on Advanced Hydrology		Practice on Flood Forecasting	
Number	DMP286E		DMP385E		DMP386E	
Lecturer	Mr. Shigenobu TANAKA		Prof. Amithirigala Widhanelage JAYAWARDENA		Ass. Prof. Kazuhiko FUKAMI	
Period	Fall through Spring		Fall through Spring		Fall through Spring	
	Lecture	Lecturer	Lecture	Lecturer	Lecture	Lecturer
1	Town Watching (Field survey) in Kurihashi	ICHARM staff	Exercises on System function estimation	Prof Jayawardena, ICHARM	Introduction of GFAS/IFAS	ICHARM
2	Town Watching (Field survey and interview) in Ohminato (1)	ICHARM staff	Exercises on least squares estimation	Prof Jayawardena, ICHARM	Prof Kudo, ICHARM	Infrastructure Development Institute (IDI)
3	Town Watching (Field survey and interview) in Ohminato (2)	ICHARM staff	Exercises on Impulse and Frequency Response Functions	Prof Jayawardena, ICHARM	Prof Kudo, ICHARM	JAXA
4	Town Watching (Field survey and interview) in Ohminato (3)	ICHARM staff	Exercises on IUH determination	Prof Jayawardena, ICHARM	Correction method of the satellite-based rainfall	ICHARM
5	Visit to Japan Meteorological Agency (JMA)	ICHARM staff	Exercises on IUH application	Prof Jayawardena, ICHARM	Validation of satellite-based rainfall	ICHARM
6	Visit to Japan Broadcasting Corporation (NHK)	ICHARM staff	Exercises on a typical rainfall-runoff model I	Prof Jayawardena, ICHARM	Main functions of IFAS	ICHARM
7	Project Cycle Management (PCM) (1)		Exercises on a typical rainfall-runoff model II	Prof Jayawardena, ICHARM	Run-off analysis using IFAS (1) Data import	ICHARM
8	Project Cycle Management (PCM) (2)		Exercises on flood routing	Prof Jayawardena, ICHARM	Run-off analysis using IFAS (2) Model building	ICHARM
9	Project Cycle Management (PCM) (3)		Exercises on Kalman filtering I	Prof Jayawardena, ICHARM	Mr Ueda, Mr Kanamori, Ise City	ICHARM
10	Project Cycle Management (PCM) (4)		Asso Prof Imbe, ARSIT	Prof Jayawardena, ICHARM	Run-off analysis using IFAS (4) Parameter estimation	ICHARM
11	Project Cycle Management (PCM) (5)		Asso Prof Imbe, ARSIT	Prof Jayawardena, ICHARM	Asso Prof Meulen, UNESCO-IHE	ICHARM
12	Interview to local municipalities and residents (1)	ICHARM staff	Exercises on Frequency analysis II	Prof Jayawardena, ICHARM	Run-off analysis using IFAS (6) Validation of calculated discharge	ICHARM
13	Interview to local municipalities and residents (2)	ICHARM staff	Asso Prof Wakigawa, JICE	Prof Jayawardena, ICHARM	Run-off analysis using IFAS (7) Validation of calculated discharge	ICHARM
14	Interview to local municipalities and residents (3)	ICHARM staff	Asso Prof Wakigawa, JICE	Prof Jayawardena, ICHARM	Run-off analysis using IFAS (8) Application to actual basins	ICHARM
15	Interview to local municipalities and residents (4)	ICHARM staff	Exercises on error analysis	Prof Jayawardena, ICHARM	Run-off analysis using IFAS (9) Application to actual basins	ICHARM

Lecture	Practice on Sustainable Reservoir Development & Management		Practice on Control Measures for Landslide & Debris Flow	
Number	DMP387E		DMP388E	
Lecturer	Prof. Norihisa Matsumoto		Dr. Shun Okubo	
Period	Fall through Spring		Fall through Spring	
	Lecture	Lecturer	Lecture	Lecturer
1	On-sight Survey for Dam Construction Site (1)		On-sight Survey for Sabo/Landslide Projects (1)	
2	On-sight Survey for Dam Construction Site (2)		On-sight Survey for Sabo/Landslide Projects (2)	
3	On-sight Survey for Dam Construction Site (3)		On-sight Survey for Sabo/Landslide Projects (3)	
4	On-sight Survey for Dam Construction Site (4)		On-sight Survey for Sabo/Landslide Projects (4)	
5	On-sight Survey for Dam Construction Site (5)		On-sight Survey for Sabo/Landslide Projects (5)	
6	Field Survey on Dam Administration (1)		On-sight Survey for Sabo/Landslide Projects (6)	
7	Field Survey on Dam Administration (2)		On-sight Survey for Sabo/Landslide Projects (7)	
8	Field Survey on Dam Administration (3)		On-sight Survey for Sabo/Landslide Projects (8)	
9	Field Survey on Dam Administration (4)		On-sight Survey for Sabo/Landslide Projects (9)	
10	Practice on Dam Design (1)		Training of Development of Procedures for Sediment Disaster Warning and Evacuation (1)	
11	Practice on Dam Design (2)		Training of Development of Procedures for Sediment Disaster Warning and Evacuation (2)	
12	Practice on Dam Design (3)		Training of Development of Procedures for Sediment Disaster Warning and Evacuation (3)	
13	Practice on Dam Design (4)		Training of Development of Procedures for Sediment Disaster Warning and Evacuation (4)	
14	Application for other countries (1)		Application of Sabo/Landslide Projects to Overseas Countries (1)	
15	Application for other countries (2)		Application of Sabo/Landslide Projects to Overseas Countries (2)	

参考資料 2-3

講義シラバス

Subject Computer Programming

Course number : DMP180E
Instructor : Mr. Shigenobu Tanaka
Term / Time : Fall through Winter

1 Course Description

This course provides general knowledge on computer programming and its skills for computation solving water-related problems covered in Course No. DMP280E "Basic Hydrology", No. DMP281E "Hydraulics", No. DMP380E "Advanced Hydrology" and No. DMP381E "Flood Hydraulics and Sediment Transport".

2 Course Outline (Course Topics)

Week

1 : Programming Language (1)
2 : Programming Language (2)
3 : Programming Language (3)
4 : Programming Language (4)
5 : Programming Language (5)
6 : Numerical Computation (1)
7 : Numerical Computation (2)
8 : Numerical Computation (3)
9 : Numerical Computation (4)
10 : Numerical Computation (5)
11 : Numerical Computation (6)
12 : Numerical Computation (7)
13 : Numerical Computation (8)
14 : Numerical Computation (9)
15 : Numerical Computation (10)

3 Grading

Reports (100%)

If a report is late for the deadline, it will be not evaluated.

4 Textbooks

4-1 Required

4-2 Others

Subject : Basic Hydrology

Course number : DMP280E
Instructor : A. W. Jayawardena
Term / Time : Fall through Winter

1 Course Description

The aim of this course is to introduce and expose the students to the basic concepts of hydrology including the different processes, quantification of hydrological variables and their measurement and/or estimation, unit hydrograph methods and the application of probability and statistics in hydrology

2 Course Outline (Course Topics)

Week

1 : Basic concepts of the Hydrological Cycle; Processes in the Hydrological Cycle
2 : Precipitation – Types, measurement and presentation of data
3 : Extreme weather – cyclones, typhoons, hurricanes
Evaporation and evapo-transpiration; Infiltration
4 : Runoff – Components, measurement and estimation of runoff
5 : Peak discharge estimation; Rational Method, Baseflow Separation
6 : Concept of rainfall excess; Role of infiltration and evaporation
7 : Unit Hydrograph Methods I
8 : Unit Hydrograph Methods II
9 : Remote sensing in Hydrology
10 : Satellite observation of rainfall (1) (by JAXA)
11 : Satellite observation of rainfall (2) (by JAXA)
12 : Probability and statistics in hydrology I; IDF curves
13 : Probability and statistics in hydrology II; Extreme value distribution
14 : Basic concepts of Stochastic Hydrology
15 : Examination

3 Grading

60% by examination; 40% by in-course assessment

4 Textbooks

4-1 Required

4-2 Others

References (selected)

Linsley, R. K., Kohler, M.A. and Paulhus, J.L.H. (1988): Hydrology for Engineers, SI Metric Edition), McGraw-Hill Book Company

Raudkivi, A. J. (1979): Hydrology – An Advanced Introduction to Hydrological Processes and Modelling, Pergamon Press.

Shaw, E. M. (1983) Hydrology in Practice, Van Nostrand Reinhold (UK)

Singh, V. P. (1992): Elementary Hydrology, Prentice Hall

Viessman, W., Lewis, G. L. and knapp, J.W. (1989): Introduction to Hydrology (Third Edition), Harper Row, Publishers.

Wanielista, M., Kersten, R. and Eaglin, R. (1997): Hydrology: Water quantity and quality control, Second Edition, John Wiley & Sons Inc.

Course Lecture Notes

Subject Hydraulics

Course number：DMP281E
Instructor：Prof. Tadaharu Ishikawa
Term / Time：Fall through Winter

1 Course Description

Open Channel Hydraulics is a branch of applied fluid mechanics to support river management and improvement works for flood disaster prevention and water environment conservation. The first half of the lecture provides the fundamentals; general transport equation being based on the idea of conservation law, and basic characteristic of one dimensional open channel flow by using the energy transport equation. The second half of the lecture provides practical features of open channel hydraulics; hydraulic jump, composite channel flow, secondary flow, sedimentation and salt wedge dynamics in estuaries.

2 Course Outline (Course Topics)

Week

1 : Fundamentals (Conservation law, Differential equations)
2 : Advection and Diffusion
3 : General transport equations
4 : One dimensional energy equation
5 : Basic characteristics of one dimensional flow-1 (without energy loss)
6 : Basic characteristics of one dimensional flow-2 (with energy loss)
7 : Quiz-1
8 : Momentum conservation, Hydraulic jump, Flow junction
9 : Composite channel flow, Secondary flow
10 : Numerical simulation of river flows
11 : Quiz-2
12 : River sedimentation-1
13 : River sedimentation-2
14 : Density currents in estuaries
15 : Examination

3 Grading

Class participation (30%), Quiz (30%), Examination (40%)

4 Textbooks

4-1 Required

4-2 Others

Subject　Basic Concepts of Integrated Flood Risk management (IFRM)

Course number：DMP282E
Instructor：Dr. Kuniyoshi Takeuchi
Term / Time：Fall through Winter

1　Course Description

This course provides the basic concepts of "Integrated Flood Risk Management (IFRM)". The mechanism of disaster risk occurrence with natural hazard, societal vulnerability, exposure, coping capacity etc. will be emphasized. It also provides the current global and international trend and activities including Japanese flood management experiences and climate change. Then the important components of IFRM will be specifically focused such as urban flood risk management, effect of forest, project assessment, etc.

2　Course Outline (Course Topics)

Week

1：Outline of integrated flood risk management (1)　-R=H*V-
2：Outline of integrated flood risk management (2)
　　-PAR model & Flood disaster indices-
3：Disaster management cycle
4：Basic concepts of IFRM (1)　- IWRM, IRBM and IFRM-
5：Basic concepts of IFRM (2)　-IWRM at basin scale-
6：Basic concepts of IFRM (3)　-Public awareness and participation-
7：Japanese experiences　-Chronological changes-
8：Global trends (1)　-Impact of climatic change-
9：Global trends (2)　-International actions-
10：Urban flood risk management (1)
11：Urban flood risk management (2)
12：Effects of forests
13：Project assessment (1)
14：Project assessment (2)
15：Field trip

3　Grading

Active participation(30%), Reports(40%), Final Examination(30%)

4　Textbooks

4-1 Required

Ben Wisner, Piers Blaikie, Terry Cannon and Ian Davis, At Risk -natural hazards, people's vulnerability and disasters- (Routledge, London & NY, 2004)

4-2 Others

Subject　Local Disaster Management and Hazard Mapping

Course number：DMP283E
Instructor：Mr. Shigenobu Tanaka
Term / Time：Fall through Winter

1　Course Description

This course provides not only general knowledge on disaster prevention countermeasures in Japan, but also practical knowledge and techniques such as flood hazard maps which are indispensable for local disaster management. In addition, students will also have opportunity to interview to local governmental officers, community leaders and residents to learn/understand actual situation of local disaster management.

2　Course Outline (Course Topics)

Week

1：Outline of disaster prevention countermeasures in Japan
2：River information and early warning system in Japan
3：Flood fighting law and some water levels for evacuation criteria
4：Outline of flood hazard map and evacuation plan
5：River management system and flood fighting
6：Outline of local disaster management plan
7：Communication system during floods in Japan
8：Countermeasures for vulnerable people
9：Community based disaster management
10：Disaster imagination game (DIG)
11：Flood directive in Europe
12：Geomorphology around rivers and alluvial plain (1)
13：Geomorphology around rivers and alluvial plain (2)
14：Human behavior and social psychology
15：Discussion on local disaster management plan

3　Grading

Reports (40%), Final Exam (60%)

If a report is late for the deadline, it will be not evaluated.

4　Textbooks

4-1 Required

"Local Disaster Management and Hazard Mapping" (2009), ICHARM

4-2 Others

Subject　Practice on Hydraulics

Course number：DMP284E
Instructor：Prof. Tadaharu Ishikawa
Term / Time：Fall through Spring

1　Course Description

This course is review and discussion about Open Channel Hydraulics, which is a branch of applied fluid mechanics to support river management and improvement works for flood disaster prevention and water environment conservation. This helps students understand deeply about topics explained in DMP281E “Hydraulics”, as well as Quiz.

2　Course Outline (Course Topics)

Week

1 ：Mathematic 1 (Ordinary Differential equations)
2 ：Mathematic 2 (Partial Differential equations)
3 ：review of Advection and Diffusion
4 ：review of General transport equations
5 ：review of One dimensional energy equation
6 ：review of Basic characteristics of one dimensional flow-1 & 2
7 ：discussion about Quiz 1
8 ：review of Momentum conservation, Hydraulic jump, Flow junction
9 ：review of Composite channel flow, Secondary flow
10 ：review of Numerical simulation of river flows
11 ：discussion about Quiz-2
12 ：review of River sedimentation-1
13 ：review of River sedimentation-2
14 ：review of Density currents in estuaries
15 ：discussion about Examination

3　Grading

Class participation (30%), Quiz (30%), Examination (40%)

4　Textbooks

4-1 Required

4-2 Others

Subject　Practice on Inundation Analysis

Course number：DMP285E
Instructor：Mr. Shigenobu Tanaka
Term / Time：Fall through Spring

1　Course Description

This course aims at consolidating the material covered in Course No. DMP283E "Local Disaster Management and Hazard Mapping".

Exercises related to Inundation Analysis and Geographic Information System(GIS), which are important techniques in Flood Hazard Mapping, will be given to the students.

2　Course Outline (Course Topics)

Week

1 : GIS (1)
2 : GIS (2)
3 : GIS (3)
4 : GIS (4)
5 : GIS (5)
6 : GIS (6)
7 : GIS (7)
8 : Inundation analysis (1)
9 : Inundation analysis (2)
10 : Inundation analysis (3)
11 : Inundation analysis (4)
12 : Inundation analysis (5)
13 : Inundation analysis (6)
14 : Inundation analysis (7)
15 : Inundation analysis (8)

3　Grading

Reports (100%)

If a report is late for the deadline, it will be not evaluated.

4　Textbooks

4-1 Required

4-2 Others

Subject　Practice on Local Disaster Management Plan

Course number：DMP286E
Instructor：Mr. Shigenobu Tanaka
Term / Time：Fall through Spring

1　Course Description

This course aims at consolidating the material covered in Course No. DMP283E "Local Disaster Management and Hazard Mapping".

Exercises related to each topic will be given to the students and they will be discussed and explained.

2　Course Outline (Course Topics)

Week

1 ：Town Watching (Field survey) in Kurihashi
2 ：Town Watching (Field survey and interview) in Ohminato (1)
3 ：Town Watching (Field survey and interview) in Ohminato (2)
4 ：Town Watching (Field survey and interview) in Ohminato (3)
5 ：Visit to Japan Meteorological Agency (JMA)
6 ：Visit to Japan Broadcasting Corporation (NHK)
7 ：Project Cycle Management (PCM) (1)
8 ：Project Cycle Management (PCM) (2)
9 ：Project Cycle Management (PCM) (3)
10 ：Project Cycle Management (PCM) (4)
11 ：Project Cycle Management (PCM) (5)
12 ：Interview to local municipalities and residents (1)
13 ：Interview to local municipalities and residents (2)
14 ：Interview to local municipalities and residents (3)
15 ：Interview to local municipalities and residents (4)

3　Grading

Reports (100%)

If a report is late for the deadline, it will be not evaluated.

4　Textbooks

4-1 Required

4-2 Others

Subject : Advanced Hydrology

Course number : DMP380E
Instructor : A. W. Jayawardena
Term / Time : Fall through Winter

1 Course Description

The objective of this course is to provide knowledge and skill in advanced techniques of hydrological data analysis, modeling and prediction

2 Course Outline (Course Topics)
Week
1 : Hydrological modelling – basic concepts and approaches
2 : Systems theory approach I – Linear theory; Time domain analysis; Frequency domain analysis
3 : Systems theory approach II – Non-linear systems, multi-linear systems
4 : Instantaneous Unit Hydrograph (IUH)
5 : Conceptual models of IUH
6 : Synthetic Unit Hydrograph
7 : Rainfall-runoff modelling I – Conceptual type
8 : Rainfall-runoff modelling II – Physics-based type
9 : Introduction to Hydroinformatics
10 : Flood routing – Muskingam method; Muskingam-Cunge method
11 : Kalman Filtering
12 : Frequency analysis
13 : Parameter estimation
14 : Errors in frequency analysis
15 : Examination

3 Grading
60% by examination; 40% by in-course assessment

4 Textbooks
4-1 Required

4-2 Others

Reference books

Battan, L. J. (1984) : Fundamentals of meteorology, Prentice Hall Inc. Englewood Cliffs, New Jersey

Eagleson, P. S: (1970) : Dynamic hydrology, McGraw Hill Book Co.

Kite, G. W. (1977): Frequency and risk analysis in hydrology, Water resources publication, Fort Collins, Colorado.

Lattermann, A. (1991) : System-Theoretical modelling in surface water hydrology, Springer- Verlag.

McCuen, R. M. ((1989) Hydrologic analysis and design, Prentice Hall

Raudkivi, R. J. (1979) : Hydrology - An advanced introduction to hydrological processing and modelling, Pergamon Press

Viessman, W. Lewis, G. L. and Knapp, J. W. (1989): Introduction to hydrology, 3rd Edition, Harper & Row.

Wanielista, M. (1990) : Hydrology and water quality control, John Wiley

Course Lecture Notes

Subject Flood Hydraulics and Sediment Transport

Course number：DMP381E
Instructor：Prof. Shoji FUKUOKA
Term / Time：Fall through Winter

1 Course Description

This course provides the basic knowledge necessary for selecting and designing the structural measures for integrated flood risk management (IFRM). The course first describes the river administration and planning for application of IFRM. Especially the methodology of comprehensive river management will be emphasized that includes planning of river hydraulics, flood hydraulics, flood control, and sediment movement to river channels and dam reservoirs. This will be followed by specific technologies of channel control and channel improvement.

2. Course Outline (Course Topics)

Week

1. Outline of rivers in Japan
2. Fundamental mechanics of flood flows
3. Steady quasi-two dimensional analysis of Flood flow (1)
4. Steady quasi-two dimensional analysis of Flood flow (2)
5. Unsteady quasi-two-dimensional analysis of flood flows
6. Unsteady two-dimensional analysis of flood flows
7. Prediction method of flow resistance in rivers with compound channels and application to river course design (1)
8. Prediction method of flow resistance in rivers with compound channels and application to river course design (2)
9. Predicting flood flow and bed variation from changes in the sediment environment—Practical issues and research directions (1)
10. Predicting flood flow and bed variation from changes in the sediment environment—Practical issues and research directions (2)
11. One-dimensional bed deformation, Computing model
12. Two dimensional bed deformation, Sand waves and bars, Meandering
13. Flow in vegetated zone
14. River restoration based on sediment transport and vegetation on stabilized bars
15. Re-meandering project for river restoration

3 Grading

Reports (20%) Final examination (80%)

4 Textbooks

4-1 Required

4-2 Others

Prints made by the instructors

Mechanics of Sediment Transportation and River Changes

Course number: DMP382E
Instructor: Dr. Shinji Egashira
Term / Time: Fall through Winter

1. Course Description

Sediment transportation is usual in rivers and takes place in various forms such as bed-load, suspended load, debris flow etc. Imbalance of sediment transportation that is naturally observed causes channel changes as usually seen in river bed degradation and aggradation, side bank erosion, sand bar formation, channel shifting etc. Such channel changes, which are suitable for ecological systems within allowable level of magnitude of their changes, will result in flood- and sediment- disasters if they are over some allowable level. Present subject intends to provide basic principles of sediment mechanics and tools for evaluating sediment transport processes and corresponding river changes as well as methods for river managements.

2. Course Outline

Week

1: Introduction (Physical property of sediment particles and sediment layer)
- Mass density, shape, size (diameter) etc.
- Concentration, porosity, pore (void), friction coefficient (friction angle) etc.
- Uniform sediment, non-uniform sediment, particle size distribution, mean size,
-Cohesive material, non-cohesive material

2: Introduction (Sediment transportation)
- Forms of sediment transportation
- Dynamics of sediment transportation (Field equations)
- River changes and associated issues

3: Mechanics of sediment transportation
- Fluid force and equation of motion for a single particle
- Critical condition for initiating bed load
- Critical condition for initiating suspended load

4: Mechanics of sediment transportation
- Treatments of bed load and bed load formulas

5: Mechanics of sediment transportation
- Constitutive relations of water-sediment mixture flow
- Bed load formula derived from the constitutive relations

- Debris flow characteristics derived from the constitutive relations

6: Mechanics of sediment transportation
- Treatment of suspended load

7: River morphology
- Bed forms and flow resistance
- Channel morphology

8: River changes
- Governing equations corresponding to demanded levels for resolutions, focusing on mathematical expressions such as 1-D, 2-D and 3-D as well as on phenomenological scales such as sediment sorting / armoring, sediment transport forms, bed forms etc.

9: River changes
- Prediction of river bed variation
- Prediction of channel morphology
- Prediction of debris flow process

10: Local scouring
- Scouring around artificial structures
- Bank protection

11: Reservoir sedimentation and associated issues
- Sediment transport process in reservoir
- Impact of reservoir sedimentation

12: Sediment management in drainage basins
- Methods for evaluating sediment transport process in drainage basins

13: Sediment management in drainage basins
- Methods for sediment controls from mountain areas to the river mouth

14: Comprehensive sediment management

15: Examination

3. Grading

50 points for reports and short quizzes

50 points for the examination at the end of semester

4. Textbooks

4-1 Required

Egashira, S. (2009): Mechanics of Sediment Transportation and River Changes, Lecture note prepared for present course.

4-2 Others

Sturm, T. W. (2001): Open Channel hydraulics, McGraw-Hill.

Graf, W. H. (1997): Fluvial Hydraulics, Wiley.

Subject　Sustainable Reservoir Development & Management

Course number：DMP383E
Instructor：Dr. Norihisa Matsumoto
Term / Time：Fall through Winter

1　Course Description

This course provides the basic ideas of dam reservoir design, construction and operation & maintenance. The lecture starts from the multiple objectives of dam reservoirs and looks into their environmental and societal impacts. The lecture covers the basic methodologies of planning of capacity and site selection, environmental impact assessment, sediment management and operation and maintenance of dam reservoirs. The students are expected to experience a preliminary but concrete process of environmental assessment of reservoirs and gets insight of the role of reservoirs dealing with climate changes.

2　Course Outline (Course Topics)

Week

1. Outline of Dam Engineering
2. Flood Control Plan
3. Flood Control Operation
4. Seismic Design for Dams
5. Latest Technology for Concrete Dam (1)
6. Latest Technology for Concrete Dam (2)
7. Environmental Impact of Dams (1)
8. Environmental Impact of Dams (2)
9. Sediment Management in Reservoirs (1)
10. Sediment Management in Reservoirs (2)
11. Dam Construction (1)
12. Dam Construction (2)
13. Dam Management
14. Effective Use of Existing Dams
15. Roles of Dams in 21st Century

3　Grading

Class participation　60%,　Reports 40%

If you miss the deadline for reports, your reports will only be evaluated for a certain percentage of what they are supposed to be:

Up to seven days: 70%

Eight days or longer: 50%

4　Textbooks

4-1 Required

4-2 Others

Subject　Control Measures for Landslide & Debris Flow

Course number：DPM 384E
Instructor：Dr. Shun Okubo
Term / Time：Fall through Winter

1　Course Description

This course provides the necessary knowledge and understanding of landslide and debris flow phenomena and their control measures necessary to exercise the IFRM. The lecture will illustrate the devastating phenomena and the causes of landslides and debris flows and provide the basic concepts of Sabo Works which control both hill slopes and channels. It will cover the important role of hazard mapping for sediment-related disasters in both structural and non-structural measures.

2　Course Outline (Course Topics)

Week

1．Outline of sediment-related disasters
2．Introduction to Sabo projects
3．Countermeasures for sediment-related disasters
4．Hazard mapping for sediment-related disasters
5．Comprehensive sediment-related disaster measures
6．Countermeasures for earthquake-induced natural dams
7．Sabo works in arid area and reforestation of degraded lands
8．Volcanic Sabo Works
9．Application of Sabo Works and landslide countermeasures to overseas countries
10．Introduction of landslides
11．Characteristics and topography of landslides
12．Stability analysis for landslide
13．Survey and emergency response for landslide
14．Maintenance measures for roads and reservoirs in landslide areas
15．Permanent measures for landslide damage reduction

3　Grading

Class participation (30%)　Report and final examination (70%)

4　Textbooks

4-1 Required

4-2 Others

Subject : Practice on Advanced Hydrology

Course number：DMP385E
Instructor：A. W. Jayawardena
Term / Time：Fall through Spring

1 Course Description

The objective of this course is to train the students in various quantitative methods in Hydrology including some exercises on hydrological data analysis, modeling and prediction.

2 Course Outline (Course Topics)
Week
1 : Exercises on System function estimation
2 : Exercises on least squares estimation
3 : Exercises on Impulse and Frequency Response Functions
4 : Exercises on IUH determination
5 : Exercises on IUH application
6 : Exercises on a typical rainfall-runoff model I
7 : Exercises on a typical rainfall-runoff model II
8 : Exercises on flood routing
9 : Exercises on Kalman filtering I
10 : Exercises on Kalman filtering II
11 : Exercises on Frequency analysis I
12 : Exercises on Frequency analysis II
13 : Exercises on Frequency analysis III
14 : Exercises on parameter estimation
15 : Exercises on error analysis

3 Grading

100% in-course assessment

4 Textbooks
4-1 Required

4-2 Others

Subject : Practice on Flood Forecasting

Course number：DMP386E
Instructor：Mr. Kazuhiko FUKAMI
Term / Time：Fall through Spring

1 Course Description

The object of this course is to build capacities to be able to undertake hydrological prediction/forecasting in poorly-gauged basins through practicing GFAS (Global Flood Alert System)/IFAS (Integrated Flood Analysis System). This course first describes the satellite-based rainfall information and a correction method that the International Centre for Water Hazard and Risk Management (ICHARM) has developed. Then this course describes feature of GFAS/IFAS. Finally participants do a run-off analysis using IFAS for actual basins.

2 Course Outline (Course Topics)

Week

1 : Introduction of GFAS/IFAS
2 : Main functions of GFAS
3 : Applicability of the satellite-based rainfall
4 : Correction method of the satellite-based rainfall
5 : Validation of satellite-based rainfall
6 : Main functions of IFAS
7 : Run-off analysis using IFAS (1) Data import
8 : Run-off analysis using IFAS (2) Model building
9 : Run-off analysis using IFAS (3) Model building
10 : Run-off analysis using IFAS (4) Parameter estimation
11 : Run-off analysis using IFAS (5) Parameter calibration
12 : Run-off analysis using IFAS (6) Validation of calculated discharge
13 : Run-off analysis using IFAS (7) Validation of calculated discharge
14 : Run-off analysis using IFAS (8) Application to actual basins
15 : Run-off analysis using IFAS (9) Application to actual basins

3 Grading

Reports(100%)

4 Textbooks

4-1 Required

4-2 Others

Material made by the instructors

Subject　Practice on Sustainable Reservoir Development & Management

Course number：DMP387E
Instructor：Dr. Norihisa Matsumoto
Term / Time：Fall through Spring

1　Course Description

This course aims at consolidating the material covered in Course No. DMP383E "Sustainable Reservoir Development & Management".
Exercises related to each topic will be given to the students and they will be discussed and explained. It also includes field survey.
Students' performance at these exercises will be counted toward their grades.

2　Course Outline (Course Topics)

Week

1. On-sight Survey for Dam Construction Site (1)
2. On-sight Survey for Dam Construction Site (2)
3. On-sight Survey for Dam Construction Site (3)
4. On-sight Survey for Dam Construction Site (4)
5. On-sight Survey for Dam Construction Site (5)
6. Field Survey on Dam Administration (1)
7. Field Survey on Dam Administration (2)
8. Field Survey on Dam Administration (3)
9. Field Survey on Dam Administration (4)
11. Practice on Dam Design (1)
12. Practice on Dam Design (2)
13. Practice on Dam Design (3)
14. Practice on Dam Design (4)
14. Application for other countries (1)
15. Application for other countries (2)

3　Grading

Class participation　70%,　Reports 30%

If you miss the deadline for reports, your reports will only be evaluated for a certain percentage of what they are supposed to be:

Up to seven days: 70%

Eight days or longer: 50%

4　Textbooks

4-1 Required

4-2 Others

Subject　Practice on Control Measures for Landslide & Debris Flow

Course number：DMP388E
Instructor：Dr. Shun Okubo
Term / Time：Fall through Spring

1　Course Description

This course aims at consolidating the material covered in Course No. DMP384E "Control Measures for Landslide & Debris Flow".

Exercises related to each topic will be given to the students and they will be discussed and explained. It also includes field survey.

Students performance at these exercises will be counted toward their grades.

2　Course Outline (Course Topics)

Week

1．On-sight Survey for Sabo/Landslide Projects (1)
2．On-sight Survey for Sabo/Landslide Projects (2)
3．On-sight Survey for Sabo/Landslide Projects (3)
4．On-sight Survey for Sabo/Landslide Projects (4)
5．On-sight Survey for Sabo/Landslide Projects (5)
6．On-sight Survey for Sabo/Landslide Projects (6)
7．On-sight Survey for Sabo/Landslide Projects (7)
8．On-sight Survey for Sabo/Landslide Projects (8)
9．On-sight Survey for Sabo/Landslide Projects (9)
10．Training of Development of Procedures for Sediment Disaster Warning and Evacuation (1)
11．Training of Development of Procedures for Sediment Disaster Warning and Evacuation (2)
12．Training of Development of Procedures for Sediment Disaster Warning and Evacuation (3)
13．Training of Development of Procedures for Sediment Disaster Warning and Evacuation (4)
14．Application of Sabo/Landslide Projects to Overseas Countries (1)
15．Application of Sabo/Landslide Projects to Overseas Countries (2)

3　Grading

Class participation (30%)　　Report and final examination (70%)

4　Textbooks

4-1 Required

4-2 Others

参考資料 2-4

講師一覧表

2009-2010 「防災政策プログラム　水災害リスクマネジメントコース」 講師一覧表

講義名	氏名（敬称略）	所属（当時）	役職（当時）	
Disaster Management Policy	森地　茂	政策研究大学院大学	教授	1
Disaster Risk Management	岡崎　健二	政策研究大学院大学	教授	2
Basic Hydrology,	Amithirigala Widhanelage JAYAWARDENA	（独）土木研究所　水災害・ﾘｽｸﾏﾈｼﾞﾒﾝﾄ国際ｾﾝﾀｰ	研究・研修指導監	3
Advanced Hydrology	田中　信也	宇宙航空研究開発機構（JAXA）　宇宙利用ミッション本部	主幹開発員	4
	久保田　拓志	宇宙航空研究開発機構（JAXA）　宇宙利用ミッション本部	研究員	5
Hydraulics	石川　忠晴	東京工業大学　大学院　総合理工学研究科	教授	6
Practice on Hydraulics	萬矢　敦啓	（独）土木研究所　水災害・ﾘｽｸﾏﾈｼﾞﾒﾝﾄ国際ｾﾝﾀｰ	専門研究員	7
Basic Concepts of Integrated Flood Risk management (IFRM)	竹内　邦良	（独）土木研究所　水災害・ﾘｽｸﾏﾈｼﾞﾒﾝﾄ国際ｾﾝﾀｰ	センター長	8
	沖　大幹	東京大学　生産技術研究所　人間・社会系部門	教授	9
	恩田　裕一	筑波大学　地球科学系	教授	10
	吉井　厚志	（独）土木研究所　寒地土木研究所	研究調整監	11
	忌部　正博	（社）雨水貯留浸透技術協会	常務理事	12
	湧川　勝己	（財）国土技術研究センター　情報・企画部（兼）調査第一部	次長	13
Local Disaster Management and Hazard Mapping,	田中　茂信	（独）土木研究所　水災害・ﾘｽｸﾏﾈｼﾞﾒﾝﾄ国際ｾﾝﾀｰ	グループ長	14
	工藤　啓	（独）土木研究所　水災害・ﾘｽｸﾏﾈｼﾞﾒﾝﾄ国際ｾﾝﾀｰ　国際普及チーム	上席研究員	15
Practice on Local Disaster Management Plan	海津　正倫	名古屋大学　環境学研究科	教授	16
	林　春男	京都大学　防災研究所　巨大災害研究センター	教授	17
	Frank Meulen	Integrated Coastal Zone Management, UNESCO-IHE	准教授	18
	山本　惠一	国土交通省　関東地方整備局　河川部	水災害予報企画官	19
	小林　一茂	国土交通省　関東地方整備局　利根川上流河川事務所　防災対策課	課長	20
	深町　知宏	気象庁　予報部　予報課		21
	工藤　信	東京都　足立区　土木部　計画調整課	課長	22
	野口　泰司	愛知県　清須市　総務部　防災行政課		23
	髙須　幹郎	三重県　防災危機管理部　地震対策室	室長	24
	中村　龍平	三重県　伊勢市　総務部　危機管理課	課長	25
	上田　武夫	三重県　伊勢市		26
	金森　弘	三重県　伊勢市　大湊町振興会	会長	27
Flood Hydraulics and Sediment Transport	福岡　捷二	中央大学　研究開発機構	教授	28
	渡邊　康玄	北見工業大学　工学部　社会環境工学科　河川防災システム研究室	教授	29
Mechanics of Sediment Transportation and River Changes	江頭　進治	株式会社　ニュージェック	技師長	30
Sustainable Reservoir Development & Management	松本　徳久	（財）ダム技術センター	顧問	31
	坂本　忠彦	（独）土木研究所	理事長	32
	海野　仁	（独）土木研究所　水工研究グループ　河川・ダム水理チーム	主任研究員	33
	川崎　秀明	山口大学	教授	34
	天野　邦彦	国土技術政策総合研究所　環境部　河川環境研究室	室長	35
	角　哲也	京都大学大学院	教授	36
	山口　嘉一	（独）土木研究所　水工研究グループ　ダム構造物チーム	上席研究員	37
	柏井　条介	（財）ダム技術センター	首席研究員	38

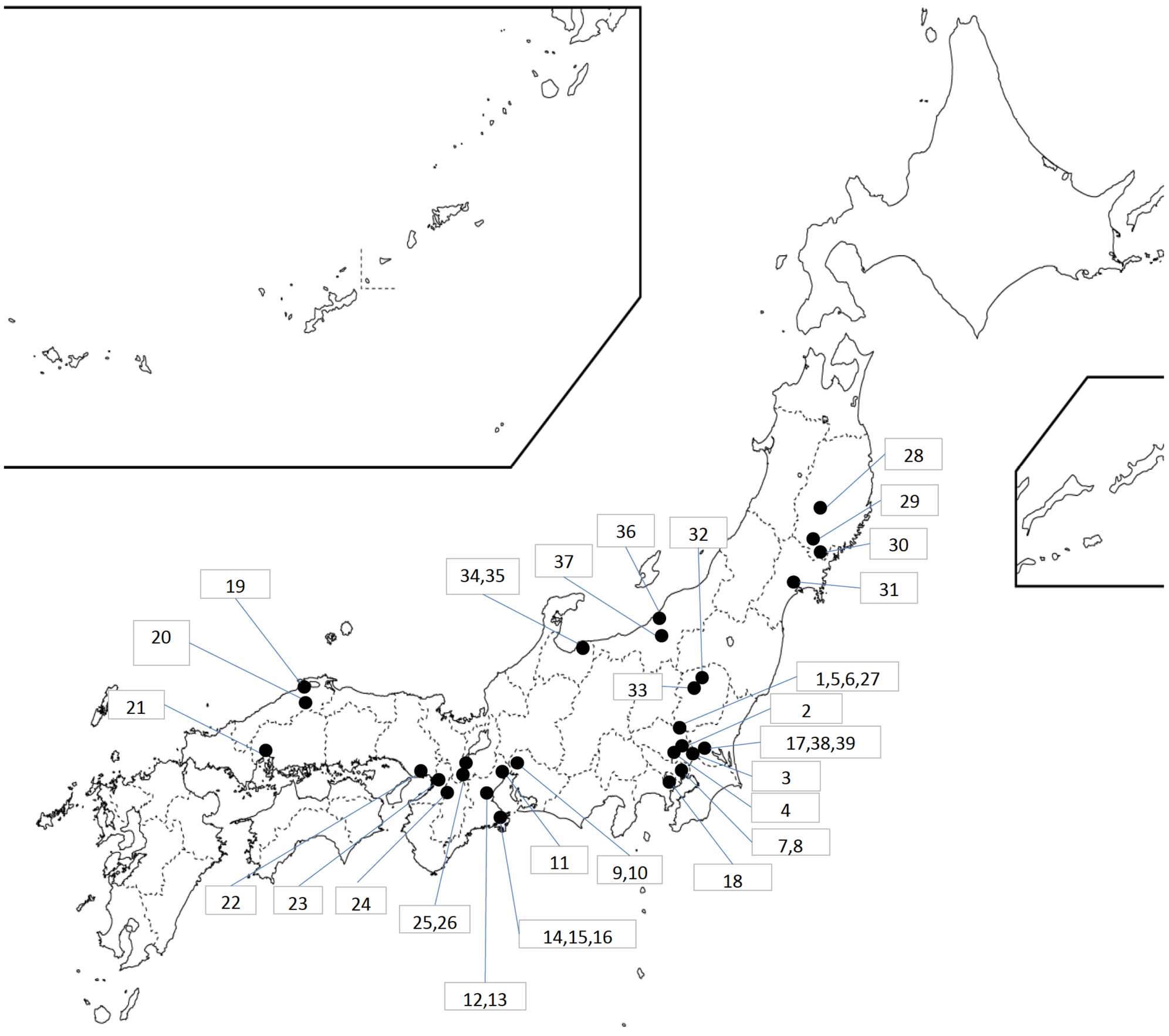
Control Measures for Landslide & Debris Flow	大久保　駿	(社)全国治水砂防協会	相談役	39
	石川　芳治	東京農業工業大学	教授	40
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	池谷　浩	(財)砂防・地すべり技術センター	理事長	43
	山田　孝	三重大学大学院生物資源学研究科　森林環境砂防学研究室	助教授	44
	渡邉　正幸	(有)国際社会開発協力研究所	所長	45
	吉松　弘之	(株)アイエステー　(Institute of Slope Technology)	斜面工学研究所長	46
	綱木　亮介	(財)砂防・地すべり技術センター　斜面保全部	部長	47
	藤澤　和範	(独)土木研究所　土砂管理研究グループ　地すべりチーム	上席研究員	48
	石田　孝司	(独)土木研究所　土砂管理研究グループ　地すべりチーム	主任研究員	49
	原　義文	(独)土木研究所　土砂管理研究グループ	グループ長	50
Computer Programming	RAJAPAKSE Hemantha Lalith	(独)土木研究所　水災害・ﾘｽｸﾏﾈｼﾞﾒﾝﾄ国際ｾﾝﾀｰ　水文チーム	専門研究員	51
	PHAM Thanh Hai	(独)土木研究所　水災害・ﾘｽｸﾏﾈｼﾞﾒﾝﾄ国際ｾﾝﾀｰ　水文チーム	専門研究員	52
Practice on Inundation Analysis	Osti Rabindra	(独)土木研究所　水災害・ﾘｽｸﾏﾈｼﾞﾒﾝﾄ国際ｾﾝﾀｰ　防災チーム	主任研究員	53
	馬籠　純	(独)土木研究所　水災害・ﾘｽｸﾏﾈｼﾞﾒﾝﾄ国際ｾﾝﾀｰ　水文チーム	専門研究員	54
	Venkatesh Raghavan	大阪市立大学　創造都市研究科	教授	55
Practice on Flood Forecasting	深見　和彦	(独)土木研究所　水災害・ﾘｽｸﾏﾈｼﾞﾒﾝﾄ国際ｾﾝﾀｰ　水文チーム	上席研究員	56
	杉浦　友宣	(独)土木研究所　水災害・ﾘｽｸﾏﾈｼﾞﾒﾝﾄ国際ｾﾝﾀｰ　水文チーム	主任研究員	57
	小澤　剛	(独)土木研究所　水災害・ﾘｽｸﾏﾈｼﾞﾒﾝﾄ国際ｾﾝﾀｰ　水文チーム	交流研究員	58
	川上　貴宏	(独)土木研究所　水災害・ﾘｽｸﾏﾈｼﾞﾒﾝﾄ国際ｾﾝﾀｰ　水文チーム	交流研究員	59
論文指導	三宅　且仁	(独)土木研究所　水災害・ﾘｽｸﾏﾈｼﾞﾒﾝﾄ国際ｾﾝﾀｰ　防災チーム	上席研究員	60
	Chavoshian Seyed Ali	(独)土木研究所　水災害・ﾘｽｸﾏﾈｼﾞﾒﾝﾄ国際ｾﾝﾀｰ　防災チーム	専門研究員	61
	中須　正	(独)土木研究所　水災害・ﾘｽｸﾏﾈｼﾞﾒﾝﾄ国際ｾﾝﾀｰ　防災チーム	専門研究員	62
	佐山　敬洋	(独)土木研究所　水災害・ﾘｽｸﾏﾈｼﾞﾒﾝﾄ国際ｾﾝﾀｰ　水文チーム	研究員	63
	猪股　広典	(独)土木研究所　水災害・ﾘｽｸﾏﾈｼﾞﾒﾝﾄ国際ｾﾝﾀｰ　水文チーム	研究員	64
	宮本　守	(独)土木研究所　水災害・ﾘｽｸﾏﾈｼﾞﾒﾝﾄ国際ｾﾝﾀｰ　水文チーム	専門研究員	65

参考資料 2-5

視察箇所一覧

List of Field Trip Destinations and Facilities

Date		Destinations/Facilities		Structural Countermeasures								Non-structural Countermeasures				
				Diversion Channel	Super Levee	Improvement of Levee	Retarding Basin	Dam	Sabo	Others		Community-based activity	System	Early Warning	Flood Hazard Map	Others
15th October Field trip (1)	1	Watarase Retarding Basin （渡良瀬遊水地）	国土交通省　関東地方整備局 利根川上流河川事務所				○									
	2	Metropolitan Area Outer Underground Discharge Channel （首都圏外郭放水路）	国土交通省　関東地方整備局 江戸川河川事務所	○												
	3	Edo River Super Levee at Zaou （江戸川スーパー堤防）			○											
12th-13th November Field trip (2)	4	Lecture on flood information system in Japan (1) （日本の洪水情報システムに関する講義（1））	国土交通省　関東地方整備局 河川部										○			
	5	Lecture on flood information system in Japan (2) （日本の洪水情報システムに関する講義（2））	国土交通省　関東地方整備局 利根川上流河川事務所										○			
	6	Town watching in Kurihashi Town （栗橋町（現久喜市）タウンウォッチング）	―												○	
	7	Lecture on flood information system in Japan (3) （日本の洪水情報システムに関する講義（3））	気象庁										○			
	8	Lecture on flood hazard map in Japan (1) （日本の洪水ハザードマップに関する講義（1））	東京都　足立区												○	
16th-18th November Field trip (3)	9	Integrated Flood Control Projects of Shounai River （庄内川河川改修事業）	国土交通省　庄内川河川事務所			○										
	10	Lecture on flood hazard map in Japan (2) （日本の洪水ハザードマップに関する講義（2））	愛知県　清須市												○	
	11	Kiso rivers separation project, Ring Levee （木曽三川分離事業、輪中）	国土交通省　中部地方整備局 木曽川下流河川事務所			○				○						
	12	Lecture on countermeasures for vulnerable people （要援護者対策に関する講義）	三重県　防災危機管理部													○
	13	Kumodu River Discoutinuous Levee （雲出川 霞堤）	国土交通省　中部地方整備局 三重河川国道事務所							○						
	14	Lecture on flood information system in Japan (4) （日本の洪水情報システムに関する講義（4））	三重県　伊勢市 総務部　危機管理課										○		○	
	15	Interview with community leader of Enza district, Ise （伊勢市円座地区での住民インタビュー）										○				
	16	Interview with community leader and Town watching in Ominato district, Ise （伊勢市大湊地区での住民インタビューとタウンウォッチング）										○			○	
20th November Field trip (4)	17	Hydrological Observatory of Kokai River （小貝川　水文観測所）	国土交通省　関東地方整備局 下館河川事務所													
3rd December Field trip (5)	18	Tsurumi River Multi-purpose Runoff Retarding Basin （鶴見川遊水地）	国土交通省　関東地方整備局 京浜河川事務所				○									
20th-23rd April Field trip (6)	19	Integrated Flood Control Projects of Hii River （斐伊川放水路、大橋川改修）	国土交通省　中国地方整備局 出雲河川事務所、 斐伊川・神戸川総合開発工事事務所	○			○									
	20	Construction of Obara dam （尾原ダム　建設現場）						○								
	21	Integrated Flood Control Projects of Ota River (太田川)	国土交通省　中国地方整備局 太田川河川事務所				○									
	22	Disaster Reduction and Human Renovation Institution （人と防災未来センター）	―									○				
	23	Integrated Flood Control Projects of Yodo River （Weir, Super levee, history, etc.） （淀川　スーパー堤防、大堰など）	国土交通省　近畿地方整備局 淀川河川事務所		○		○									
	24	Kamenose Landslide （亀の瀬地すべり）	国土交通省　近畿地方整備局 大和川河川事務所						○							
	25	Amagase Dam （天ヶ瀬ダム）	国土交通省　近畿地方整備局 淀川ダム統合管理事務所 天ヶ瀬ダム管理支所					○								
	26	Seta Weir （瀬田川洗堰）	国土交通省　近畿地方整備局 琵琶湖河川事務所				○									
15th May Field trip (7)	27	The 59th Tone River Flood Fighting Drill （第59回　利根川水防演習）	―							○						
26th-28th May Field trip (8)	28	Construction of Isawa dam （胆沢ダム　建設現場）	国土交通省　東北地方整備局 胆沢ダム工事事務所					○								
	29	Ichinoseki Retarding Basin （一関遊水地）	国土交通省　東北地方整備局 岩手河川国道事務所				○									
	30	"Disaster Hazard Area" in Fujisawa Town （藤沢町「土地利用一体型水防災事業」）	国土交通省　岩手河川国道事務所、 岩手県　藤沢町													○
	31	Secondary Levee （大崎市鹿島台町　二線堤）	国土交通省　東北地方整備局　北上川下流河川事務所、宮城県　大崎市				○									
	32	Ikari Dam & Kawaji Dam （五十里ダム、川治ダム）	国土交通省　関東地方整備局　五十里ダム管理支所、川治ダム管理支所					○		○						
	33	Nikko Sabo （日光砂防）	国土交通省　関東地方整備局 日光砂防事務所						○							
17th-18th June Field trip (9)	34	Integrated Flood Control Projects of Kurobe River （黒部川）	国土交通省　北陸地方整備局 黒部川河川事務所					○		○						
	35	Unazuki Dam （宇奈月ダム）														
	36	Integrated Flood Control Projects of Shinano River （信濃川大河津分水）	国土交通省　北陸地方整備局 信濃川河川事務所	○												
	37	Imo River Sabo （芋川砂防）	国土交通省　北陸地方整備局 湯沢砂防事務所						○							
5th July Field trip (10)	38	Visit to National Research Institute for Earth Science and Disaster Prevention	（独）防災科学技術研究所										○			
	39	Visit to Japan Aerospace Exploration Agency	（独）宇宙航空研究開発機構										○			


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参考資料 2-6

現地視察行程表

Schedule of Field Trip (1)

to urban flood control facilities

((Date)) Thursday, 15 October 2009

((Visitors)) about 27 persons
(11 Participants of JICA" Comprehensive Management of River and Dam" course, 12 Participants of ICHARM Master's Course "Water-Related Risk Management Course of Disaster Management Policy Program", and 3-4 accompanying coordinators from the both courses)

((Schedule))

Time	Tour
7:30	Leaving JICA Tsukuba
	↓ Bus
9:30 – 10:30	**MLIT Watarase retarding pond administration office** *General explanation showing a DVD* *Historic site conservation zone* *(Nakanoshima, old Yanaka village, seen from the bus)* *Questions and Answers at Watching Tower*
	↓ Bus
13:30 – 15:00	**Metropolitan Area Outer Underground Discharge Channel** *Explanation and Observation*
	↓ Bus
15:30 - 16:00	**Super Levee in Zaou/Tsutsumidai distict, Noda city**
	↓ Bus
17:00	Arrival to JICA Tsukuba

Schedule of Field Trip (2)

for the lectures and Pre Town Watching

[November 12th (Thu)] *(basically move by bus)*

7:30 Departure from TBIC

9:30-11:00 Lecture on flood information system in Japan (1)
at MLIT Kanto Regional Development Bureau (Saitama City)

(Lunch break on the way)

13:00-14:30 Lecture on flood information system in Japan (2)
at Tone River upper reach work office of MLIT (Kurihashi Town)

15:00-16:30 Pre Town watching exercise in Kurihashi

18:40 Arrival at TBIC

[November 13th (Fri)] *(basically move by train)*

8:47 Hitachi-no-ushiku Sta. ->(JR line & Subway)-> 10:00 Ootemachi Sta "C5 Exit".

(Walk)

10:30-12:00 Lecture on flood information system in Japan (3)
at Japan Meteorological Agency

(Walk to Tokyo Sta. and get on subway)

12:30-14:15 Visit to MLIT HQs, Lunch in restaurant of MLIT bldg.

(move by train)

16:00-17:00 Lecture on flood hazard map in Japan (1)
at Adachi Ward Office

(Walk)

17:23 Umejima Sta. -> (Tobu line & JR line) -> 18:31 Hitachi-no-ushiku Sta.

Schedule of Field Trip (3)
to Chubu Region

[16th November, 2009]

6:30 Leave JICA Tsukuba
↓ JICA Bus
6:57 Hitachi-no-Ushiku Sta.
↓ JR Jyouban Line
8:10
8:40 Tokyo Sta.
↓ Express Shin-Kansen Nozomi 213
10:24 Nagoya Sta.
↓ Bus
11:00-12:20 **Lecture at Shounai River Office of MLIT, Watching around Shounai River**
↓ Bus
12:45-13:20 **"Mizutopia" Flood Fighting center & Lunch time**
↓ Bus
13:30-15:00 **Lecture on The effort for effective use of Flood Hazard Map Kiyosu City**
↓ Bus
16:00-17:00 **Visit to Kiso River National Park**
↓ Bus
18:30 Check in Tsu Terminal Hotel

[17th November, 2009]

8:45 Departure
↓ Bus
09:00-10:30 **Lecture on Countermeasures for vulnerable people at Mie Prefectural Office**
↓ Bus
11:00-11:30 **Filed Trip to Kumozu River**
↓ Bus
13:00-14:00 **Lecture on Community based disaster management (1) In Enza**
↓ Bus
14:30-15:00 **Courtesy Visit to Ise Mayor**
15:00-16:30 **Lecture on Communication system of flood information in Japan**
↓ Bus
17:30 Check in Asano-kan Hotel (Japanese style)

[18th November, 2009]

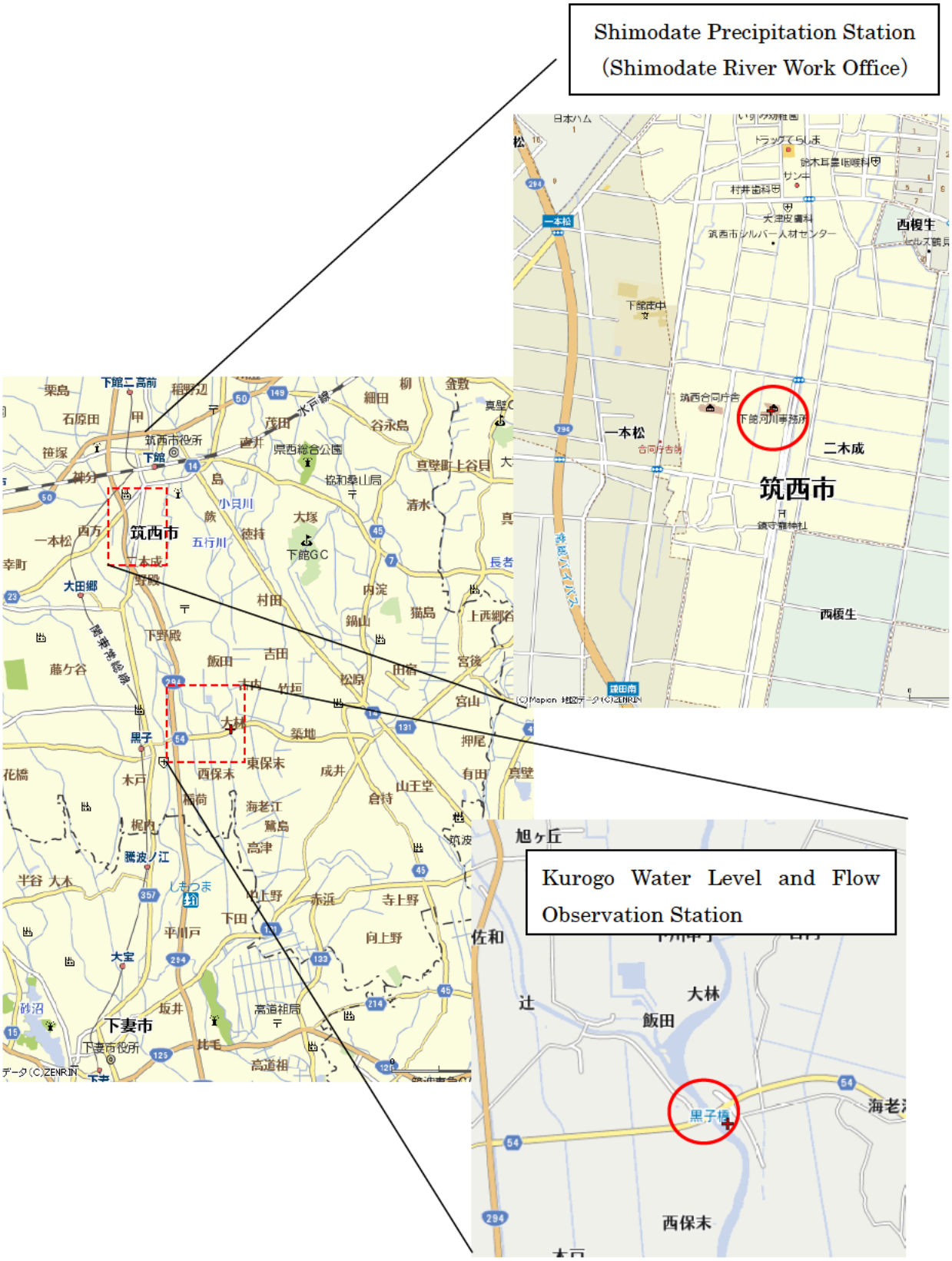
7:00 Departure
↓ Bus
07:30-09:00 **Ise Shrine**
↓ Bus
10:00-11:00 **Lecture on Community based disaster management(2) in Ohminato**
11:15-12:00 **Disaster Imagination Game(DIG)**
13:00-15:00 **Town Watching in Ohminato**
↓ Bus
15:52 Uji-Yamada Sta.
↓ Kintetsu Express
17:14
17:30 Nagoya Sta.
↓ Express Shin-Kansen Nozomi 36
19:13 Tokyo Sta.
Tokyo →Ueno→Hitachi-no-Ushiku
20:46
20:55 Hitachi-no-Ushiku Sta.
↓ JICA BUS
21:10 JICA Tsukuba

Schedule of Field Trip (4)

to Observatory of Kokai Riv. and Ninomiya Sontoku Museum

November 20, Friday

Time	Itinerary
12:30	Departure from ICHARM
13:10	Arrive at Kurogo Water Level and Flow Observation Station
13:10～13:20	Lecture on the outline of the telemeter system of Kuroko Water Level and Flow Observation Station
13:20～14:00	Facility tour
14:00	Leave Kurogo Water Level and Flow Observation Station
14:20	Arrive at Shimodate Precipitation Station (Shimodate River Work Office)
14:20～15:05	Lecture on the telemeter system of Shimodate Precipitation Station
15:05	Leave Shimodate Precipitation Station
16:00～16:45	Ninomiya Sontoku Museum （Monoi 2013-2, Maoka-City）
18:15	Arrive at ICHARM
18:45	Get- Together (In case you want join, ¥1,000 is requested)
19:10	Arrival at TBIC


Shimodate Precipitation Station
(Shimodate River Work Office)
Kurogo Water Level and Flow
Observation Station
筑西市
下館
一本松
二木成
西榎生
下妻市
西保末
黒子橋

Schedule of Field Trip (5)

to Integrated Flood Countermeasure in Tsurumi River basin

Date:
Dec. 3, 2009

Instructor:
Mr. Masahiro Imbe, Executive of Association for Rainwater Storage and Infiltration Technology (ARSIT)
社団法人 雨水貯留浸透技術協会　理事 忌部 正博

Time Table:

10:30-11:00 ① **Lecture on Integrated River Basin Management by Mr. Imbe**
（鶴見川流域センター）

11:00-11:50 **Guidance on Integrated River Basin Management in Tsurumi River** (including view from the rooftop)

11:50-12:15 move by bus

12:15-13:35 ② **Kirigaoka Regulating Pond**
（緑テニスガーデン（霧が丘遊水地））

13:35-14:00 move by bus

14:00-14:30 ③ **Rainwater harvesting at individual house**

14:30-15:30 move by bus

15:30-16:00 ④ **Rainwater storage and infiltration system**

Schedule of Field Trip (6) to Chugoku & Kinki Region

－－－－－－－－－－－－－－－－－－－－－－－－－－－－

【20 April(Tue)】

7:47　Hitachi No Ushiku Sta.

↓　JR etc.

9:42　Haneda Airport 2nd building Sta.

10:40　Haneda Airport

↓　ANA813

12:00　Yonago Airport

↓　Lunch at the Airport, move by Bus

14:00-14:40　**１．Ohashi Riv. Community Center**　(Matsue City, Shimane Pref.)

大橋川コミュニティセンター（松江市）

↓　Bus

16:00-17:00　**２．Construction site of Hii Riv. Diversion Channel** (Izumo city, Shimane Pref.)

斐伊川放水路建設現場（出雲市）

↓　Bus

17:30　Stay in Izumo city (Green Hotel MORRIS http://www.hotel-morris.co.jp/izumo/index.php)

－－－－－－－－－－－－－－－－－－－－－－－－－－－－

【21 April(Wed)】

8:00　Hotel

↓　Bus

9:00-10:00　**３．Construction Site of Obara Dam**(Unnan City, Shimane Pref.)

尾原ダム建設現場（雲南市）

↓　Bus

13:45-15:45　**４．Oota Riv. (Gion Water Gate, Motoyasu Riv. Water Terrace)**

(Hiroshima City, Hiroshima Pref.)

太田川（祇園水門、元安川テラス）（広島市）

↓　Bus

16:00-17:30　**５．Peace Memorial Park・Peace Museum**　(Hiroshima City, Hiroshima Pref.)

平和記念公園（広島市）

↓　Bus

18:06 Hiroshima Sta.

↓　Nozomi 56

19:21　Shin-Kobe Sta.

↓　Bus etc.

20:00　Stay in Kobe city (JICA Kobe)

－－－－－－－－－－－－－－－－－－－－－－－－－－－－

【22 April(Thu)】

9:30-11:30　**６．Disaster Reduction and Human Renovation Institution**（Kobe City, Hyogo Pref.）

阪神・淡路大震災記念　人と防災未来センター（神戸市）

↓ Bus

13:00-17:00　**７．Yodo Riv. 淀川**（Osaka Pref.）

13:00-13:40　Yodo River Weir, Kema Pumping station　淀川大堰、毛馬排水機場

13:50-14:00　Shirokita Marshland (Wand)　城北ワンド

14:40-15:00　Super Levee (at Ikaga)　伊加賀スーパー堤防

15:10-16:10　Lecture on history of Yodo River　淀川の歴史（淀川資料館：枚方市）

↓ Bus

17:30　Stay in Osaka City (JICA Osaka)

－－－－－－－－－－－－－－－－－－－－－－－－－－－－

【23 April(Fri)】

8:15　Hotel

↓ Bus

9:00-10:20　**８．Kamenose Landslide**（Kashiwara City, Osaka Pref）

亀の瀬地すべり（柏原市）

↓ Bus

13:00-14:00　**９．Amagase Dam** (Uji City, Kyoto Pref)

天ヶ瀬ダム（宇治市）

↓ Bus

14:45-16:30　**１０．Seta Riv. Weir** (Otsu City, Shiga Pref)

瀬田川洗堰（大津市）

↓ Bus

17:30　Kyoto Sta.

17:52　Kyoto Sta.

↓ Nozomi 44

20:13　Tokyo Sta.

↓ JR

21:41　Hitachi No Ushiku Sta.

－－－－－－－－－－－－－－－－－－－－－－－－－－－－

Schedule of Field Trip (7)

to "The 59th Tone River Flood Fighting Drill"

「第 59 回利根川水系連合水防演習」

【Venue】 Itakura Town, Gunma Pref. 群馬県板倉町大高嶋地先

【Schedule】 15th May (Sat)

9:00 Start of events

9:30 Opening Ceremony

Opening address by Minister of MLIT

10:00- Start of the drills

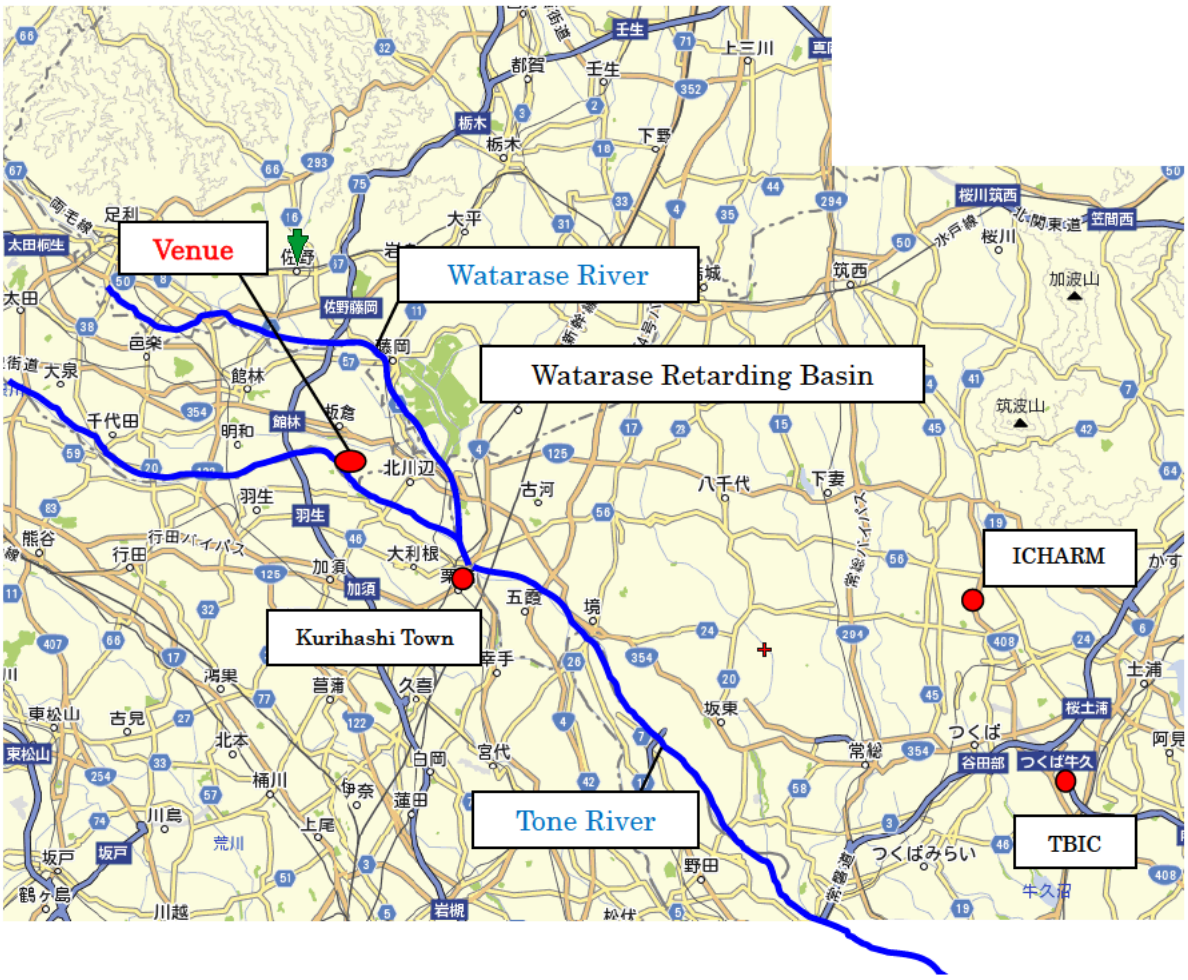
12:20 Closing Ceremony

【Number of Participant】 20,000

【Organizer】 MLIT,

Gunma Pref., Ibaraki Pref., Saitama Pref., Chiba Pref., Tochigi Pref., Tokyo Pref., Kanagawa Pref., Tatebayashi City, Itakura Town

"Exercise on Flood Fighting" will be held from 10:00-12:20.
We can experience of making sandbags, etc.



Schedule of Field Trip (8) to Touhoku Region

【26th, May (Wed)】

7:53 Hitachino-Ushiku Sta.
↓ JR Line
8:52 Ueno Sta.
9:22 Ueno Sta.
↓ [Shinkansen ("Hayate" 11)]
11:36 Mizusawa-Esashi Sta.
↓ (Lunch at "Tokusui-en" Park: Irrigation Facility)
13:00-14:30 **1. Construction site of Isawa**
↓
16:00-17:30 **2. Ichinoseki Retarding Basin**
↓
18:00 Hotel in Ichinoseki City

【27th, May (Thu)】

7:45 Departure
↓
8:15-8:30 **3. Flood marks at "Michi-no-eki Kawasaki"**
↓
9:15-10:30 **4. Flood countermeasure in narrow area of Kitakami River** (Fujisawa Town)
↓
13:00-15:00 **5. Secondary levee "Nisen-Tei"** (Kashimadai District, Ohsaki City)
↓
17:21 Sendai Sta.
↓ [Shinkansen ("Yamabiko"62)]
18:30 Utsunomiya Sta.
↓
18:40 Hotel in Utsunomiya City

【28th, May (Fri)】

8:00 Departure
↓
9:00-11:30 **6. Sabo works** at Nikkou
↓
13:30-15:30 **7. Dam Collaboration between Kawaji Dam & Ikari Dam**
↓
19:00 TBIC

Schedule of Field Trip (9) to Hokuriku Region

【17th June】

8:05 Hitachi-No-Ushiku Sta.

↓ JR Line

9:02 Ueno Sta.

(transfer)

9:34 Ueno Sta.

↓ Shinkansen ("MAX Toki 315")

10:40 Echigo-yuzawa Sta.

(transfer)

10:48 Echigo-yuzawa Sta.

↓ JR Line

12:29 Uozu Sta.

↓ Bus

13:00-16:30 1: Kurobe River

Shimo-sinkawa coast

Discontinuous levee

Sediment-related countermeasure

Unazuki Dam

↓ Bus

20:00 Stay at NagaokaCity

【18th June】

8:30 Departure

↓ Bus

9:30-11:00 2: Shinano River Ohkouzu Museum

↓ Bus

13:00-15:30 3: Sabo Works in Imo River (Yamakoshi District)

Watching DVD on "Response from the big earthquake" at City Branch Office

Natural dam in Terano

Natural dam in Higashi-Takezawa, Houses in the water

↓ Bus

16:25 Urasa Sta.

↓ Shinkansen ("MAX Toki 334")

17:54 Ueno Sta.

(transfer)

18:17 Ueno Sta.

↓ JR Line

19:19 Hitachi-No-Ushiku Sta.

Schedule of Field Trip (10)

on Laboratory tour in Tsukuba

Date: 5th, July (Mon) 2010

Schedule:

12:40　Departure from ICHARM

↓

13:00～14:30　**National Research Institute for Earth Science and Disaster Prevention** (NIED)

- Lecture on “Infiltration on roads” and “Real time simulation on inundation damage (Ame Risk Now)”
- Laboratory tour

※守衛所に立ち寄り、左側のガラス張りの建物前まで行く。

↓

15:00～16:10　**Japan Aerospace Exploration Agency** (JAXA)

- Laboratory tour

※入り口入って左側の駐車場に入り、E2 の建物に寄る。

16:30　Pick up at JAXA by JICA Bus

↓

16:50　Arrival at TBIC

参考資料 2-7
視察レポート課題

Contents of
"Comparison of flood countermeasures between your country and Japan"

ICHARM

<Contents>

1. Describe an outline, some flood countermeasures, and its characteristics of three rivers.

Hii River (0.5 Page)
Oota River (0.5 Page)
Yodo River (0.5 Page)

2. Describe an outline, role and characteristics of two dams.

Obara Dam (0.5 Page)
Amagase Dam (0.5 Page)

3. Describe an outline, role and characteristics of Kamenose landslide countermeasure.

(0.5 Page)

4. Please compare these flood countermeasures with those in your countries and describe how you apply those Japanese techniques you got in this field trip to your countries' situation.

(1 page)

<Note>

Total pages : About 4 pages (including some photos)
Deadline: 17:00, Friday, 7 May
Submission : To Ebashi san by e-mail.

Contents of
"Comparison of flood countermeasures between your country and Japan Vol.2"

ICHARM

<Contents>

1. Describe an outline, some flood countermeasures, characteristics, your impression and thought of Kitakami River. (0.5 Page)

2. Describe an outline, role, characteristics, your impression and thought of the secondary levee in Ohsaki city.
(0.5 Page)

3. Describe an outline, role and characteristics of two dams and your impression and thought.
Isawa Dam (0.5 Page)
Ikari Dam & Kawaji Dam (1.0 Page)

4. Describe an outline, role and characteristics of sabo works in Nikko and describe how you would do if you were in charge of the sabo works. (1.0 Page)

5. Please compare these flood countermeasures with those in your countries and describe how you apply those Japanese techniques you got in this field trip to your countries' situation. (0.5 page)

<Note>

Total pages : About 4 pages (including some photos)
Deadline: 17:00, Friday, 11 June
Submission : To Ebashi san by e-mail.

Contents of
"Comparison of flood countermeasures between your country and Japan Vol.3"

ICHARM

<Contents>

1. Describe the outline, some flood countermeasures, characteristics, your impression and thought of the two rivers.

Shinano River (0.5 Page)

Kurobe River (0.5 Page)

2. Describe an outline, role and characteristics of sabo works in Yamakoshi District and describe how you would do if you were in charge of the sabo works. (1.0 Page)

3. We have visited about 30 flood countermeasure places in this course (Please refer Table 1).

3.1 Please overview the places and describe your whole impression and thought about various flood countermeasures in Japan with comparing situations in your country. (1.5 Page)

3.2 Please rank these places from Rank 1 to Rank 5 and describe the reason respectively. (0.5 page)

<Note>

Total pages : About 4 pages (including some photos)

Deadline: 17:00, Friday, 2 July

Submission : To Ebashi san by e-mail.

参考資料 2-8

日直シート

"Nicchoku(日直)" Sheet

Roles of "Nicchoku"	
Before the class	○Take attendance. (If you have to be absent due to illness or other reasons, you need to tell the Nicchoku of the day about your absence. The Nicchoku will then report it to the training coordinator in the morning before the class starts.)
During the class	○Take notes to fill in necessary information on the Nicchoku sheet. ○(At the time of field survey) Take attendance and report to the coordinator every time the class come back on the bus to make sure that no body will be left behind.
After the class	○Clean the whiteboards. ○Turn off the room lights. ○Close and lock the windows. ○Fill in this sheet and e-mail to Ms. Ebashi (ebashi77@pwri.go.jp) within the day.

Day/Month			
Name of the Nicchoku			
List of Participant			
About Each Class	1st Class	Lecture	
		Lecturer	
		Contents (5 Key Words)	
	2nd Class	Lecture	
		Lecturer	
		Contents (5 Key Words)	
	3rd Class	Lecture	
		Lecturer	
		Contents (5 Key Words)	
	4th Class	Lecture	
		Lecturer	
		Contents (5 Key Words)	
Comments on the day's classes (At least 100 words)			

参考資料 3-1

学位記

ANNEX- 66

NATIONAL GRADUATE INSTITUTE FOR POLICY STUDIES

Based on the recommendation of the Faculties of
the National Graduate Institute for Policy Studies, and
the Public Works Research Institute,

the National Graduate Institute for Policy Studies
hereby confers the degree

of

Master of Disaster Management

upon

Saha Partha Pratim

for having successfully completed all of the requirements of the
Disaster Management Policy Program

on this, the sixteenth day of September, 2010

Tatsuo Hatta
President
National Graduate Institute for Policy Studies

竹内邦良
Director
International Centre for Water Hazard and Risk Management,
Public Works Research Institute

修第1935号

学位記

Saha Partha Pratim
1977年1月29日生

政策研究大学院大学及び土木研究所が
連携して実施する防災政策プログラム
(政策研究大学院大学政策研究科
修士課程)を修了したので修士(防災政策)の
学位を授与する

平成22年9月16日

政策研究大学院大学長 八田達夫

土木研究所
水災害・リスクマネジメント国際センター長 竹内邦良

参考資料 3-2

土木研究所　修了証

Certificate

No. 0

This is to certify that

Mr.

enrolled for Training for expert on flood-related disaster mitigation

(2009-2010 Water-related Risk Management Course of Disaster Management Policy Program)

at the International Centre for Water Hazard and Risk Management (ICHARM)

during October 2009- September 2010

and completed the course successfully on this, the 17th of September, 2010.

Taketo Uomoto,
Chief Executive of Public Works Research Institute (PWRI), Tsukuba, Japan

---

Kuniyoshi Takeuchi,
Director of International Centre for Water Hazard and Risk Management
under the auspices of UNESCO (ICHARM), Tsukuba, Japan

参考資料 3-3

“Best Research Award”

Best Research Award

for Distinguished Research
in the
Disaster Management Policy Program
2009-2010

Is awarded to

Amnatsan Somchit

Shigeru Morichi
Program Director
National Graduate
Institute for Policy Studies

Kuniyoshi Takeuchi
Director
International Centre for Water
Hazard and Risk Management,
Public Works Research Institute

Tsukuba, Japan
September 17, 2010

参考資料 3-4

“ICHARM Sontoku Award”



Certificate of
"ICHARM Sontoku Award"

This is to certify that

---

is conferred the "ICHARM Sontoku Award",

which is given to the person who has contributed best
for the smooth implementation and unity of the all students as a "team",

in "2009-2010 Water-related Disaster Management Policy Program",

at the International Centre for Water Hazard and Risk Management (ICHARM).

Kuniyoshi Takeuchi
Director of ICHARM

International Centre for Water Hazard and Risk Management (ICHARM)
under the auspices of UNESCO,
Public Works Research Institute (PWRI), Japan

参考資料 5-1

第 1 回アンケート結果（2009 年 11 月実施）

2009 年 11 月 9 日アンケート集計結果

5 - Very good　　4 - Good　　3 - Satisfactory　　2 - Poor　　1 - Very poor

Q1. Lecture (Level, Relation between objective and lecture etc.)

4.4　(Average)

- All lectures are all necessary for me
- It's good for us to review and understand the contents.
- Almost all of the lectures are related with our objective
- Lectures are very important and give positive effect to me.
- Very well organized.
- All lectures began with the fundamental basics.
- Too many topics covered within a single class
- Too less time for self-study, so difficult to catch up
- We can see the process (actual process) of the lectures in laboratory or real implementation.
- It is somewhat difficult to follow up.　The course duration should be increased.

Q2. Lecturer

4.2 (Average)

- Lecturers are very knowledgeable.
- It is an honor to learn from distinguished and famous professors.
- All lecturers are trying their best. They all have good patience with all of us.
- Lecturers that give us explanation and lectures are good.
- Communication problem in language.
- Some lecturer has the difficulty in speaking English.
- Some lecturers gave us just a lecture.
- I think we need more discussion during a lecture time.

Q3. Course (Schedule, Field Trip etc.)

3.9 (Average)

- Field trips are good.
- The schedule is well designed.
- The number of field trips shall be increased.
- Course schedule is very intense.
- Individual study hours should be included
- Some topics are too tired, for example, the course in Titech.
- We don't have free time to ask questions and to discuss something we don't understand.
- One week before the examination date, should be the schedule of such subject

Q4. Life in PWRI

4.8 (Average)

- Study and equipment facilities are excellent in PWRI.
- The people are very co-operative and helpful.

Q5. Life in JICA Tsukuba (including commuting bus)

4.5 (Average)

- Living facility is good in JICA Tsukuba.
- Difficult to adjust with food. (food)
- Food menu is not enough. (food)
- Very expensive (food)
- Limited place to visit for refreshing.
- Sometimes it was not on schedule. (bus arrangement)
- Maybe it would be better for us to get more rest. (bus arrangement)

Q6. Individual Study

3.2 (Average)

- The time of self study is still not enough
- It would be better if a supervisor is selected at starting of the course.
- Course schedule is too intense.
- No individual study hours allocated in schedule.
- Lack the reference books and cannot find the suitable materials
- Time is very limited. I really need more time to self study,
- It is difficult to do research without going to field.

Others to be improved

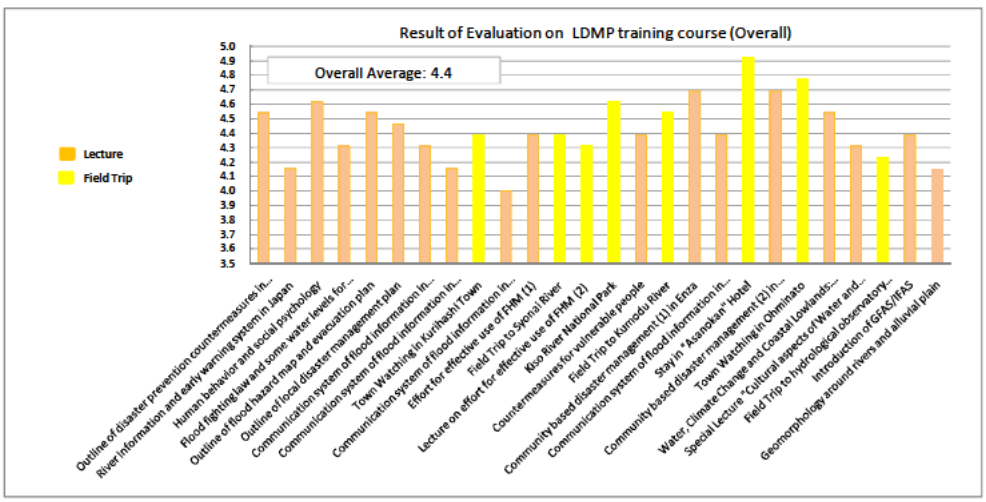
- There should be some class test in between final exams.
- Field trip should be increased.
- PWRI laboratory is now not allowed to be used
- If a researcher/professor is assigned to every student as per the student's field of interest, from the beginning. It would be better.
- I hope that we can get the lecture material or notebook before the class, at least one day ahead.
- Please try to add some reference books for us in our student room.
- The schedule need to be improved by balancing the time for study

参考資料 5-2

第 2 回アンケート結果（2009 年 12 月実施）

Questionnaire on
"Local Disaster Management and Hazard Mapping"

Date		Field trip/Lectures	Lecturer	1(very poor)-5(excellent)
10th	Tue	Outline of disaster prevention countermeasures in Japan	Mr Tanaka (ICHARM)	4 5
		River information and early warning system in Japan	Mr Kudo (ICHARM)	4 2
11th	Wed	Human behavior and social psychology	Prof Hayashi (Kyoto Univ)	4.6
		Flood fighting law and some water levels for evacuation criteria	Mr Kudo (ICHARM)	4 3
		Outline of flood hazard map and evacuation plan	Mr Tanaka (ICHARM)	4 5
		Outline of local disaster management plan	Mr Tanaka (ICHARM)	4 5
12th	Thu	Communication system of flood information in Japan (1)	Kanto Regional Bureau of MLIT	4 3
		Communication system of flood information in Japan (2)	Tone River Upstream Work Office of MLIT	4 2
		Town Watching in Kurihashi Town		4.4
13th	Fri	Communication system of flood information in Japan (3)	Japan Meteorological Agency (JMA)	4.0
		Effort for effective use of FHM (1)	Adachi Ward, Tokyo	4.4
16th	Mon	Field Trip to Syonai River		4.4
		Lecture on effort for effective use of FHM (2)	Kiyosu City, Aichi Prefecture	4 3
		Kiso River National Park		4.6
17th	Tue	Countermeasures for vulnerable people	Mie prefectural government office	4.4
		Field Trip to Kumodu River		4 5
		Community based disaster management (1) in Enza		4.7
		Communication system of flood information in Japan (4)	Ise City Office, Mie Prefecture	4.4
		Stay in "Asanokan" Hotel		4 9
18th	Wed	Community based disaster management (2) in Ohminato		4.7
		Town Watching in Ohminato		4 8
20th	Fri	Water, Climate Change and Coastal Lowlands impacts and adaptation with examples from Europe	Prof Meulen (UNESCO-IHE)	4 5
		Special Lecture "Cultural aspects of Water and Climate throughout the world"	Mr Rien van Zetten	4 3
		Field Trip to hydrological observatory around Kokai River		4 2
25th	Wed	Introduction of GFAS/IFAS	Mr Fukami (ICHARM)	4.4
		Geomorphology around rivers and alluvial plain	Prof Umitsu (Nagoya University)	4 2
			Average	**4.4**



参考資料 5-3

第 3 回アンケート結果（2010 年 1 月実施）

January, 2010

Result Interim Course Evaluation

ICHARM

[Subject*]
*"Subject" means "Basic Hydrology", "Hydraulics" etc. and consists of 15 "lectures".

Q-1 Please describe the good/bad points regarding to the following subjects. (including practice) .

(1) Basic Hydrology

Good points: The Syllabus is good. It covers almost all important theories of hydrology.
Bad points: This subject has one final exam. It is better to have a midterm exam. It would be better if we get more mathematical problem solving class.

・Good syllabus covers all necessary aspects.
・More example and mathematical problem solving class could have been better.

Though this lecture is very fundamental, we still need time to digest the knowledge, sometimes the course schedule seemed too fast for us. And we also need more examples.

Basic hydrology is the important subject for any water related study we got more knowledge and experience through this course.

This subject very important and should be one of key subject in this training course program.
For my case, the more practice or exercise of this subject would be very helpful in understanding.

Good :Refreshing the basic concept of Hydrology, and that gives me the understanding concept of hydrology. It is good caused we have many reference hydrology book in the student room
Bad : There many section that we should study, but the time is very limited

The most important lectures is hydrology. So, all of points in hydrology is good. Even, it is very difficult lecture for me.

This subject is useful for more understanding about basic concept of hydrology.

The subject Basic Hydrology is important to us masters students to understand the basic hydrological process and the cause and effect of rainfall-runoff modeling. I also appreciate the principles in processing hydrological data for statistical analyses and forecasting, which are the bases for river flow generation and flood forecasting.

This course consists of all essential theories those needed to understand the basic concept of Hydrology. The subject is well explained by the lecturer. A very well prepared course material book have been given to us so that at any time We can rifer essential theories. Also well illustrated examples are attached with the theories so that students can understand the practical applications of basic hydrology. As a negative point I see a big volume of subject is thought within a limited period of time.

This subject is very important for flood-related disaster management. The lecturer has a very good knowledge and could explain us well. For me this subject will be fruitful for me and I can apply it to my work. The bad point is only that the time for this subject is very limited.

Good :It's very useful that contents of lectures are fundamental.
Bad :I request more exercise in the lectures.

(2) Hydraulics, Practice on Hydraulics

Good points: This is also a good subject considering the basis of hydraulics are included in the syllabus with some advanced topics with partial differential equations.
Bad points: We have to travel 3 hours to attend the class. We cannot give full concentration as we are tired when we reached to Tokyo Institute of Technology.

・Good subject, Physical meaning with theory is taught which is very good.
・Journey to Tokyo Institute of Technology is tiring, too many topics covered in a single class.

Very hard trip to join the course, during the course, we can understand the lecture, but after class, it was difficult to recall the knowledge, maybe because there were no examples which can tell us how to use the knowledge, and also lack of additional reference materials that we can study ourselves when we back to TBIC.

Hydraulics is also one of the major courses on water related ideas it is also helpful for us during our study.

This subject also plays important role. We are lucky to have this subject which is taught by a very competent person.

Good ：We study about the basic equation in open hydraulic flow
Bad ： It is very theoretical, actually I just want to know about the concept of the hydraulic engineering and the Japan experience in this area, After this course over I hope can get some idea/concept about Japan Experience in hydraulic engineering that can be applied in my country or not.

It can be applied for design of flood control structures.

The subject Hydraulics refreshes us to the concept of open channel (river) hydraulics which include subcritical, critical depth and supercritical flow. This course enables us to understand the flood wave action and propagation in actual rivers, not just theoretically but physically as well.

The method of teaching is appreciated. But course material given is only limited to few Power Point slides. Therefore one small slide contains rather difficult (in nature) big much of hydraulic theories. Therefore if well explained course material is given, it will be easier for students to understand the subject.

The subject is very interesting and the lecturer can explain us very well. However, the material that we got from the lecturer is not suitable. The material were the PowerPoint handout which is very small, difficult to read, and has very rare space for us to add something for better understanding.

Good :It's very useful that contents of lectures are fundamental.
Bad ： Tokyo Institute of Technology is very far from Tsukuba.

(3) Basic Concepts of Integrated Flood Risk management (IFRM)

Good points: This subject is a new idea for me. I never get educational concept on this matter in such an identical way. This topic gives us an idea about the disasters around the world their consequences. This topic includes the idea of evaluation the root causes of any disaster and give more attention to that root causes rather than structural measures.
Bad Points: I do not find any bad points of this subject.

A good course in which we can try to think about the problems and try to find the ways to solve problems according to the principles we learned in the class. Prof. Takeuchi gave us enough time to think the problems by ourselves.

Basic concepts of integrated flood risk management is very important course for disaster mitigation

studies we got clear and brief knowledge about the management of flood disasters risk theoretically and also practically through different field visit that helps us to share Japanese experience also.

Interesting lecturer and gave many new perceptions. Using method which is more emphasize to discussion, stimulated class to elaborate the topic and creating a very good chance of lesson learn from other country.

Good : This lecture gives me a new view for the concept of Integrated Flood Risk management
Bad : It is better if we have some completed guidance book from Japan Experience in this Field, because Japan has a many experience in this knowledge

Good points : To know the basic concept of disaster including hazard and vulnerability.

It is a valuable subject to make the plan of flood related disaster mitigation.

This is one subject I honestly appreciate most. Through the lecture I am able to understand the concept of disaster risk, threatening natural hazards, societal vulnerabilities and resiliency and coping mechanism, which are the fundamental aspects of water related disaster risk management.

The subject is very well explained in rather interesting manner. Course materials and very good reference book also given to us. Therefore it is very easier to understand the principles behind the subject.

This subject is a conceptual discipline. It is interesting to adapt for flood management in our country. We received a very good material for this subject. The lecturer can also well explain us.

Good :Many lecturers from different fields gave us informative lectures.

(4) Local Disaster Management and Hazard Mapping, Practice on Hazard Mapping

Good points: This course is good as we visited many focal points of flood disaster mitigation systems of Japan. The expert participants of various countries enrich the class. This course gives us an idea of development of Hazard map of flood disaster mitigation and also town watching exercise gives us a new view to identify the problems of an area.
Bad Points: This course deals with the development of flood hazard map of Japan only. The type of flood and related problems are different in different countries. This should be taken into account.

Effective subject to mitigate flood in real life.

There were lots of chances to participate to the practices, like town watching, it's very good experiences, and we also knew many things about the disaster management and hazard mapping by field trips.

This course is also helpful for us we know how hazard map is prepared for who and also based on what all this things is good experience for us in addition to this we exercise it with town watching practice.

This subject has very good combination of theories and practices. Theories were delivered by good lecturers and practices were conducted by visiting places where succeeded in implementing the disaster management and hazard mapping. If it possible, maybe next year places to be visited are different than this year.

Now I know the basic Idea and the concept for making Hazard Map for the non-structural countermeasure disaster for my country.

Good point : We learn how Japanese people very concern about flood hazard mapping.

This subject provides the much knowledge about the planning and hazard mapping.

This subject give us the general knowledge in the use of flood hazard maps. FHM when relayed and supported by the public can be effective in the local disaster management. This lecture is truly memorable as we were made to join another training group on FHM and jointly conducted town watching in Ohminato and Kurihashi Districts.

This subject was thought in rather practical way with necessary field visits. The concepts are also explained in field by practitioners as well as by the field level technicians and community level stakeholders.

This subject is the practical way of IFRM. It gives us more understanding on IFRM. With an explanation from the technician person, this subject is very useful for us.

Good : We had many field trips and practices which were very interesting.

(5) Flood Hydraulics and Sediment Transport

Good points: The subject includes the hydraulics of flood propagation and its characteristic with the characteristics with flood plain. The idea of changing flood with the vegetation coverage on flood plain was new for me.

Some interesting topics like vegetation in flood plain and their effect is covered, which is new to me.

It was a very good course which we knew more about basic knowledge of flood hydraulics and sediment transport. Prof. Fukuoka used the easy way to make us understood the course.

This course is based on river flood hydraulics it is directly related with our study to manage flood comes through river it is important to know river character or hydraulic nature in addition to this professor Fukuoka explained us more of practical way to make it clear his way of teaching also help us to understand the subject.

Important subject, especially it was presented by excellent lecturer. The subject itself is inspiring, gives a new perspective of understanding of Hydraulic and sediment transport.

This lecture has opened my view caused river engineering and sediment transport, and the basic problem in my river basin area (generally in Indonesia, specified in Bengawan Solo River basin area).

River channel management is important in flood control management so that it is also the useful subject for me.

This subject supplements the topic on basic channel hydraulics flow types such as gradually varied flow, unsteady flow in consideration of sediment flow. Understanding the phenomena of sediment transport as it affects the riverbed through erosion, aggradation and degradation.

The subject is well explained by the lecturer. A well prepared course notes has given to students with practical examples where necessary.

This subject is very new for me. However, with the good explanation together with the example it makes me not too difficult to understand. Good prepared materials were also given to us.

Good : It's very useful that contents of lectures are fundamental and full of latest info.
Bad : Some contests were overlapped with Prof. Egashira's lectures.

(6) Computer Programming

Good points: This class is very interesting for me as I was not familiar with computer programming. The lecture materials and type of teaching was good. The assignments also help us to understand the basics of the FORTRAN language.
Bad Points: The computer programming class should be taken simultaneously. It needs extensive practice in class and home. But if we have other class and assignments we cannot concentrate or practice on programming. So I think this lectures should be one or two weeks intensive program.

The way of teaching enabled all of us to get the basics of Fortran.
Some more practice classes would have been arranged.

Thanks for the great patience of Dr. Hai and Dr. Rajapakse, by this course I learned the fundamental programming techniques and basic programming idea, but sometimes the course progressed too slow, and we didn't learn more about the numerical programming.

Computer programming specially Fortran programming is also important subject most of the analysis is based on this program and dr.hai and Dr. Rajapakse help us to understand the basic idea of this program.

Helpful lecture, especially as a tool to understand other subject/lecture for computing as well as to develop the logical ability in solving the problem.

Good : now I know the basic role in this Computer Programming
Bad : Studying FORTRAN program need more time consume much time for me and this lecture is better for researcher not for policy maker.

Good Points : it is very useful to make computation programming by myself and applicable in my office.
Bad point : Fortran I think very complicated, maybe it is better to learn another programming like basic.

It will be useful to analysis the water related problem.

Here, we masters students are introduced to Fortran programming a widely used computer language for numerical analyses, technical calculations and software algorithms. We are keenly interested with this subject as most of us will be using Fortran programming in developing our thesis.

The subject is very well explained by both lecturers rather methodical way. A well explained series of course notes are also given to us so that at any time We can refer and find solutions at the time of practical applications.

This subject is very important for my thesis. Both lecturers explained and gave the example for us to understand well. The material gave to us are also very useful for the reference.

Good : Lecturers gave us basic exercises step by step.

(7) Practice on Flood Forecasting

Good points: This was a very good experience for us to practice flood forecasting with IFAS. We use IFAS independently with given data and some data are downloaded directly from internet. This gives us an idea how a model runs and how the parameters of an models are related with the outputs.
Bad Points: More practice could be done in class or in home as assignments.

- IFAS was introduced, it's good to know a new tool for flood forecasting
- too brief

A good experience about using IFAS system. I hope we can learn more about the system.

It a good application to improve the understanding of flood prediction. After practice with data from Japan, maybe better to have advanced exercise in using IFAS, for example student using their own river basin.

We got the point and the felling of the important thing caused Flood Forecasting development.

Good Points : we learning how to forecast flood even it is similar like hydrology, difficult.

IFAS is a very useful tool for flood analysis of ungauged catchment in our country.

I find this subject really interesting considering that flood forecasting is the important component of flood warning.

The subject is well explained with field visits where necessary. As a negative point at the field visits it seemed to be difficult to get enough information in order to well understand the flood forecasting methods practicing in Japan.

This subject is also the practical subject that makes us more understanding on flood forecasting.

Good : Lecturers gave us basic exercises step by step.

[Lecture]

Q2-1 Please fill in the name and the reason of **the best 3 useful lectures** for the water-related disaster mitigation in your country.

●

1. Community based disaster management in Ohminato
   (Reason). This gives a good idea how to involve a community in the management of disaster.
2. Global trends(1)- Impact of climate change(Prof Oki)
   (Reason) Bangladesh is one of the countries expected to affected by climate change. This lecture contains some idea to deal with climate change and existing water resources.
3. Human behavior and social psychology (Prof. Hayashi)
   (Reason) This lectures described the cause individual death in a disaster to develop Hazard Map. In our country we should consider to take any measure after any disaster.

●

1. Dr. Oki (Climate Change)
   (Reason) Bangladesh being one of the worst victims of climate change has to prepare for its surface water resource conservation from now. His lecture deals with this issue.
2. Dr. Watanabe
   (Reason) Formation of bar, alternative bar etc. Very common in Bangladesh river.
3. Community level participation in Disaster mitigation
   (Reason) Community level participation in Disaster Mitigation is still weak in Bangladesh. We can learn from examples of Japan.

●

1. Local Disaster management and Hazard mapping
   (Reason) Knew about the advanced experience on disaster management, especially the hazard mapping, it is very good for disaster mitigation, which is most important task we should focus and complete now.
2. Basic Concepts of Integrated Flood Risk Management
   (Reason) This course gave me a complete new idea about IFRM, it is very good for flood risk management.
3. Computer Programming
   (Reason) Numeric Programming is a very powerful tool for all kinds of problems, and by this course, I learned about the programming idea, this is very important.

●

1. Basic and advanced hydrology
(Reason) it is the base or the initial point for every water related analysis.
2. Integrated flood risk management
(Reason) as far us we are a trainer for flood disaster mitigation it is very important for us.
3. Mechanics of sediment transportation and sediment change
(Reason) if there is flood problem there will be sediment transportation so it is basic course also.

●

1. Integrated Flood Risk Management
(Reason) overcoming water related disaster has to be done by integrating of all sector.
2. Hydrology
(Reason) hydrology is very fundamental to be understood, especially in establishing base concept of counter measures to mitigate water related disaster.
3. Flood Hydraulics
(Reason) :my country is very prone to flood, so it is a need to understand the hydraulics behavior before, during and after flood

●

1. Hydrology
(Reason) The concept and the basic idea of this lecture is very important for us to making decision in our duty work.
2. River Engineering
(Reason) The concept and the basic idea of this lecture is very important for us to making decision in our duty work
3. Hydraulic
(Reason) The concept and the basic idea of this lecture is very important for us to making decision in our duty work

●

1. Hydrology
(Reason) This lectures is the fundamental knowledge of water resources and how to manage it in every place in the world.
2. River Information and Early Warning System in Japan
(Reason) Japan has good effort to develop and maintain system information about river and early warning system. My country should learn more about it.
3. Computer Programming
(Reason) This is very useful to learn how to make programming by our self and it will be useful and applicable in my office.

●

1. Basic concept of IFRM
(Reason) Development of effective flood disaster management plan
2. Rainfall runoff modeling
(Reason) Improvement of forecasting and warning system
3. Flood hazard map and local disaster management plan
(Reason) For the improvement of non-structural measures of flood control system in my country

●

1. Prof. Takeuchi
(Reason) He always patiently explain to us students the general concept of disaster risk management and always challenges us to not just to be observer but be an active participant to it. More than the concepts of IFRM, Prof. Takeuchi promotes the change in behavior and attitude of community to be better prepared for disaster risks.
2. Prof. Jayawardena
(Reason) He has scholarly presented the topic on Hydrology taking careful consideration of the viewpoint of us masters students. Moreover, he gives good advice on our thesis topics, allowing us to develop our confidence by leading us to the right direction with our topic.

3. Prof. Tanaka
(Reason) I like Prof Tanaka's presentation and humanization of notable Japanese people such as Shintoku and Hokusai relating to disaster mitigation. Sometimes the best way to understand the concept of DRM is to know the early people who were at risk and took the challenge by turning disaster into opportunity, by being resilient. I guess this is the concept of this course by preparing us masters students to become good disaster planners and managers someday.

●
1. Flood Forecasting methods in Japan.
(Reason) My country is considerably behind in non structural measures such early flood warning.
2.Flood Hazard Mapping
3. Fortran
(Reason) The language has many applications in everywhere

●
1. Basic Hydrology
(Reason) It is a very important subject which is applied in most of water-related disaster mitigation.
2. Basic Concepts of Integrated Flood Risk management (IFRM)
(Reason) This subject is the key idea of the water-related mitigation. It gave us how to make the measures we have develop effective in the real situation which only the technical knowledge is not enough.
3. Local Disaster Management and Hazard Mapping, Practice on Hazard Mapping
(Reason) This subject enable us to learn the real cases of disaster management both successful and failure one. We can adapt these experience to disaster management in our country.

●
1. Global trends
(Reason) Full of general and latest information of global hydrological cycle and climate change.
2. PCM
(Reason) A kind of Logical game is useful tool for participatory planning
3. Community based disaster management in Enza
(Reason) Importance of local community and society toward disaster mitigation was recognized.

Q2-2 If you think there are **any subjects of lectures to be added or deleted** to the course, please describe.

In my opinion "Typical design of River bank protection measures in Japan" shall be added as one lecture in this course

Lecture- System of Dissemination of Flood warning message in different countries and scope of improvement considering the infrastructure, socio-economic condition etc of those countries

Basic Statistic Analysis for water resources development

In our country, over 200 number of dams have been implemented within recent two decades to fulfill the requirements of nation (such as agriculture, flood mitigation, hydropower generation and other purpose). Some of these dams are still under unstable conditions and period. So, if I can learn about the dam safety management and effective reservoir operation which will be meet the intended purpose of these dams.

Important topics related to flood mitigation that should be added to the course include:
A subject describes water resources development should be added to the course.

a. Survey works for flood prone areas
   - How to undertake cross sectional survey (survey limits along river banks) and longitudinal survey of rivers (extent or limits in the upstream or downstream of affected area) for example survey length, L = 2 x river width, W.

- How to survey flood prone areas (extent of survey)
- How to conduct simple cross section survey to determine area, A and get discharge Q using formula: Q= A x v

b. Investigation of Rivers
- How to use 'flood markings' to determine the maximum experienced flood (actual)
- How to conduct simple floating (pet bottle and stopwatch) exercise along rivers to determine flow velocity (during normal times)
- How to get sample of riverbed materials to determine flooding characteristics such as, experienced flood, flow velocity, flood height, etc. (Japan has extensive laboratory results on this topic)

c. Planning and design of flood control structures
- Using the common Technical Standards, Guidelines developed by MLITT
- Participate in small scale laboratory experiment using 2-D / 3-D flume, to understand flood flow mechanics. ICHARM has to come up with Memorandum of Understanding and cooperation with PWRI to allow the use of small flume.

d. Topic on Sabo Works as countermeasure for Sediment Induced Disasters

A subject which describes more detail about landslide should be added to the course.

Lectures of water quality should be added.
e.g. general information of water pollution in urban and rural area. etc (12)

[Lecturer]
Q3-1 Please fill in the name and the reason of **the best 3 lecturers** *(Except for ICHARM Staff).*

●
1.Prof. Taikan Oki
(Reason) Way of Presentation and English expression are very excellent.
2. Prof. Tadaharu Ishikawa
(Reason) His Lecture material is good, every power point slide contain may ideas which he describes in a good way sometimes explain with examples in the white board.
3. Dr. Shinji Egashira
(Reason) He always explain the topics in white board and give good assignments to understand the lecture materials.

●
1. Dr. Oki
(Reason) Excellent presentation skill
2. Dr. Ishikawa
(Reason) Explains complex subjects in a easy way
3. Dr. Egashira
(Reason) Very patient, gives mathematical problem to solve which helps to understand the theory taught.

●
1. Prof. Fukuoka
(Reason) A very nice and amiable teacher, can explain the knowledge for us very clearly.
2. Prof. Ishigawa
(Reason) A very good instructor, can always let us understand well about the abstract principles.

●
1. prof.fukuoka

(Reason) he knows the subject very well and he can explain each and everything clearly and precisely.

2. prof.egashira

(Reason) even if he had some problem to express easily due to language problem he knows his course very well and he try his best to help us very much and also I appreciate his patience to explain what we don't understand in different way or examples.

3. Dr.oki(guest lecturer)

(Reason) he is the best lecturer his way of teaching is so special and clear and also he knows the science behind climate he is number one.

●

1. Prof. Shoji Fukuoka

(Reason) : excellent understanding to the subject, and conveyed the Subject very well to the student

2. Prof. Ishikawa

(Reason) : very good English and great teaching method

3. Prof. Egashira

(Reason) : very patient and dedicated to the student understanding

●

1. Prof. Fukuoka

(Reason) He teaches us very clear and gives me many idea and concept in the River Engineering.

●

1. Prof. Egashira
2. Prof. Fukuoka
3. Prof. Ishikawa

●

1. Prof. Fukuoka

(Reason) He explained clearly and warmly discussed during the lecture.

2. Prof. Egashira

(Reason) His explanation is good enough for me to understand clearly.

3. Prof. Oki

(Reason) He was very active and I got much knowledge from his lecture.

●

1. Prof. Taikan Oki

(Reason) Good explanation on global trends in water resources

2. Prof. Shiji Egashira

(Reason)Explains sediment transport effectively

3. Prof. Ishikawa

(Reason) Always a delight to travel to TIT to attend his laboratory

●

1. Prof. Egashira

(Reason) The subject is very well explained by the lecturer in order to give a clear understanding rather friendly manner.

2. Prof. Fukuoka.

(Reason) The subject is explained rather simple and practical manner.

3. Dr. Oki

(Reason) The subject is explained rather different and new way.

●

1. Prof. Egashira

(Reason) He is a very good teacher. Although his English is not so good but he has a very high intention to make us understand his subject.

2. Prof. Ishikawa

(Reason) The subject is he teach is difficult to understand but he can explain us in the simple way that make us easier to understand.

3. Prof. Oki

(Reason) The subject is interesting and he can explain clearly. His style of explanation also attract us to follow without any boring.

●

1. Prof.Fukuoka

(Reason) Prof described key points clearly in every lecture.

2. Prof.Oki

(Reason) The lectures of Global trends were informative.

3. Prof.Meulen

(Reason) The lecture was informative.

[Others]

Q4 If you have any requests and comments for the course, please give us your opinions freely.

I want to visit some river bank protection works by concrete blocks or stones during flood and low flow season. Visiting same place both low flow and high flow period we can compare the situation.

・More mathematical problem solving assignment or works can help to understand the related theory of the Theoretical subjects can
Instead of a one final exam at the end of the session, short time spanning quiz in every two or three class can help students remain continuously focused on the subject.
・In every one or two week one day should be allocated only for self study purpose so that students can come to ICHARM, study all day and contact teachers if they face any problem.
・A tour to JAXA can be arranged to learn more about the agency.

・For some subjects, such as hydrology and hydraulic, having exercises and practices are very good to improve the understanding. It gives (probably) hard time to student, but it would be much better as long as schedule and the time of collecting are well arranged.
・Maybe the lecturer who is not familiar with teaching in English should be asked beforehand so that an interpreter can be provided.

I do not know the step or what we should do in our Self Study from March until September in the future. It is better for me if ICHARM arranged what kind report (just only master Thesis or we should do another report????) and the step what we should do in self study.
Because Time study in Japan is very limited, I want preparing some material to support myself study/report before that time (I am worry caused the time).

Especially in River Information and Early Warning System in Japan, I think it is very short duration lectures. It is better to extend the duration of the lecture also with other very good lecturers.
Also in computation programming, we should learn another programming, so we can choose which is better to use.
Hydrology : to practice more and to learn how to solve the problems, give more times to discuss many example with sensei.

Lectures about flood control are comprehensive and sufficient for knowledge, planning and design techniques. And also from study tour we can realize actual condition of flood control facilities, effectiveness and operation.

Student room is cold.
Wireless internet connection is better not only in student room but also in lecture room.
The printer should be used by individual laptop through LAN cable.

参考資料 5-4

第 4 回アンケート結果（2010 年 3 月実施）

March, 2010

Interim Course Evaluation

ICHARM

[Subject]

Q1 Please describes the good/bad points regarding to the following subjects. (Including practice)

(1) Sustainable Reservoir Development & Management

- This topic is very applicable to us Masters Students the multifunctional use of Dams for water supply, irrigation, hydropower generation and flood control – which is very related to our course. However, I would like to suggest for future lectures to show Japanese examples and teach how to generate 'Dam Management and Operation Rule Curve', which is widely used worldwide, for water reservoir allocation.
- Have very good understanding about Japanese reservoir development practices with the history of the subject. Get good theoretical knowledge also. Negative point I see is that there was no field visits to see the practices.
- In this course, I learned many techniques about reservoir, but most of these techniques are too specialized, and most of us are not reservoir engineers, so I think maybe we can just briefly understand the knowledge about reservoir, don't need to arrange so many lectures for us.
- Good Points: The lectures contain very important information about reservoir management. The lecturers are prominent in their respective field. We have got a good idea not only about Japan but also about the planning and latest design technologies.
  Bad point: In Bangladesh there is only one Dam. And I do not work for that hydropower dam. So there is not much scope for me to implement my learning immediately. Contain too much items which is difficult to understand within this short period.
- Historical accounts Dam of Japan and also development & modification of construction strategy of dam around the world was very interesting.
- Good point : I very like this subject, I can get many information about dam reservoir in Japan, so I can bring the information and all Japanese experience to my country. I hope we can visit dam in Japan
  Bad point : There is no bad point, but I hope we can get Dams in Japan book, not only borrow it.
- Good: Topic and lectures material is good enough for my basic knowledge in Reservoir Development and Management
- From these lectures, we have learned the design, advanced technology, construction method, sediment control and environmental impact of dams. We can utilize the adaptive technology and methods from these lectures for our future projects.
- This subject is quite comprehensive. It covered almost all aspects of reservoir development and management, such as construction, safety management, maintenance and environment and also gave more understanding about reservoir development and management in Japan.
- These subject provides us the understanding of reservoir development and development in Japan.
- informative lectures of Japanese dam management and technology
- This topic is very applicable to us even after we back to our country because sustainability is the most important issue for structure development specially dam reservoirs. Most of our reservoir are not sustainable because of different reasons and I got more detail explanation during this lecture .

(2) Control Measures for Landslide & Debris Flow

- This topic is relevant and useful in understanding the mechanism of sediment related disasters, and the policies and strategies and countermeasures – both structural and non structural - undertaken by Japan in mitigating them. These significant topics give us master students the insight on how to apply to our country the same practical and sustainable solutions. However, I want to suggest to include in future lectures to include the topic 'Snake Curve for Landslide and

Debris Flow' warning and evacuation. This is a very effective non-structural measure which can be included in disaster preparedness programs of most of us master students' countries.

- Gave an excellent knowledge about the Landslide and Debris Flow in Japan with good theoretical background.
- By this course, I learned the mechanics of landslide and debris flow, and also tried some practices about how to define landslide area. The lecturers showed us many examples of landslide and debris flow, by these examples, I understood how to distinguish different types of debris disasters, it is very helpful for my work. I think during the lectures, the lecturers should try to show us different examples as more as possible, let us know how to use theories in our daily work is most important.
- Good Points: Covers many types of sediment related disasters like Land slide, slope failure debris flow etc. the examples and videos of such videos are very interesting for me. These give me a good idea about new type of disasters which is uncommon in Bangladesh.
  Bad points: Contain too much items which is difficult to understand within this short period. This type of disaster is not common in Bangladesh. So, little or no scope to implement the knowledge.
- The video footage of landslide and debris flow gave a vivid account of intensity of the disaster. This is a new experience for me.
- For control measure for landslide and debris flow: we can learn how Japan control landslide and debris flow. But, to protect the slope, Japan construct very strong infrastructure, which is it need huge cost. This point is very difficult to apply in my country.
- Good: It is good topic for Landslide and Debris flow prevention
- We have got the better knowledge about the nature of landslide & debris flow and its countermeasures.
- This subject added more understanding on how Japan deal with landslide and debris flow, especially about sabo. And presentation about countermeasures activity in each country of us was good way to sharing knowledge and information.
- This subject is very useful to consider the appropriate measures for landslide and debris flow in our country. However, the practice time is too few to make a good understanding.
- informative lectures of Sabo management and technology of countermeasures
- This topic gives us knowledge about landslide problem, causes and counter measures in addition to this we got some explanation about debris flow counter measure like sabo projects. This experience is helpful for me to notice the reason of occurrence of landslide problem and counter measures to be taken.

(3) Mechanics of Sediment Transportation and River Changes

- In my work as Sabo Engineer in the Philippines, this lecture of Professor Egashira is very relevant. We got to understand the phenomena of sediment transportation which is the actual case in a river flow and how it affects riverbed variation and changes in the river plan form or morphology. This is one topic I truly enjoy most and learn so much from.
- Gave an excellent knowledge about the Landslide and Debris Flow in Japan with good theoretical background.
- In this lecture, we learned lots of theories about sediment transportation and river changes, but because lack of specific examples, I don't know how to use these theories and only can understand the rough idea about sediment transportation.
- Good Points: Gives a good idea about the river morphology in accordance with the sediment transport phenomena. Almost all the empirical relations of sediment transport are covered in this course.
  Bad Point: Empirical equations are difficult to understand. More exercise or related problems should be solved in the class.
- Interesting subject, rivers in Bangladesh have sedimentation problem.
- Good: It is a good lecture
  Bad : Because this topic has a large topic and material it is better to have some references books

for our reference material in our country.

- It provides us to understand about the sedimentation process and its effect on river changes which will be useful for river improvement works in our countries.
- I found that this subject is important regarding the disaster management especially in understanding the sediment related disaster. Therefore it is a basic knowledge that need to be understood.
- This subject is a new knowledge for me. It makes me understanding the process of change of channel. However, in my opinion, the practice on the prediction of channel change is not enough.
- The lectures cover not only fundamental mechanism of sediment transport but also latest information of sediment management.
- In this lecture professor Egashira explain very well his experience about sediment mechanics and transportation he know the subject very well and the lecture is very important because sediment problems is directly related with many water related problems like flood, river morphology change because of bed formation, erosion and deposition I think we got more knowledge during the lecture.

(4) Practice on Inundation Analysis

- Need more practices on the subject in order to have a better understanding.
- Dr. Osti has great patience to teach us how to develop inundation map, after detail procedures introduction, all of us did the analysis by ourselves again, and all of us can really understand the procedures clearly by this way.
- Good Points: It is a good practical exercise. HEC-RAS is a good software which is freely available and now it can be used with GIS features. So it is good to know the use of this software with practical examples.
  Bad points: The time is not enough to understand all the features of HEC-RAS. More time should be given for proper understanding of GIS and HEC-RAS
- Interesting and has the potential of practical application. It can be helpful for a flood prone country like Bangladesh.
- This is the first time I learn about GIS and inundation analysis. It is very important for me to improve my knowledge.
- Good : This lecture is very important and useful for practical applied in the real condition. This application can make ordinary people aware of their risk on flood disaster.

  Bad : The time of lecture is very limited.
- Inundation analysis gives us practical experience.
- Application such as GIS and HEC-Ras are commonly use in our country as tools especially for spatial analysis map based. Therefore I considered myself very lucky to have a change to learn about this 2 applications.
- The good point is that this subject gives us the chance to learn and improve the GIS knowledge. It also can be directly used to generate the inundation map in our country.
- Good: The lecturers support us to complete the practices very much.
  Bad: Limitation of applying 1-D inundation analysis should be explained using some examples.
- This practice is very interesting to me and it is more related with our field of study in addition to this Dr. Osti explain the subject in a very clear way .

[Lecture]

Q2-1 Please fill in the name and the reason of **the best 3 lectures (or lecturers) in "Sustainable Reservoir Development & Management"**

Rank 1	Rank 2	Rank 3
Dr. Matsumoto	Dr. Amano	Dr. Umino
Dr. Sakamoto	Dr. Matsumoto	Dr. Yamaguchi
Dr. Matsumoto	Dr. Yamaguchi	
Dr. Yamaguchi	Dr. Umino	Dr. Sakamoto
Dr. Sakamoto	Dr. Umino	Dr. Yamaguchi
Dr. Yamaguchi		
Flood Control Plan and Operation (Dr. Umino)	Environmental Impact of Dams (Dr. Amano)	Sediment Management in Reservoir (Prof. Sumi)
Dr. Matsumoto	Dr. Yamaguchi	
Dr. Matsumoto	Dr. Yamaguchi	
Prof. Sumi	Dr. Yamaguchi	Dr. Amano
Dr. Matsumoto	Dr. Amano	Dr. Umino

●1. Dr. Matsumoto (Reason) Excellent presentation of roles of dams in Japan
2. Dr. Amano (Reason) Very relevant lecture on environmental impact of dams
3. Dr. Umino (Reason) The topic flood mitigation by dams is very relevant to us

●1. Dr. Tadahiko Sakamoto (Reason) Very good presentation
2. Mr. Norihisa Matsumoto (Reason) Very good presentation
3. Dr. Yoshikazu Yamaguchi (Reason)Good theoretical knowledge was given

●1. Prof. Matsumoto (Reason) Very kindly professor, gave us many useful advices.
2. Dr. Yamaguchi (Reason) Told us many new techniques about dam construction

●1. Dr. Yoshikazu Yamaguchi (Reason) Explanations are very good
2.Dr. Umino (Reason) Covers the flood mitigation by Dams very well
3. Dr . Tadahiko Sakamoto (Reason) Gives a good overall idea about Dams of Japan and world.

●1. Dr . Sakamoto (Reason) description of dams of Japan & the World was interesting.
2. Dr. Umino (Reason) good explanaion
3. Dr.Yamaguchi (Reason) good explanation about dam management

●1. Dr. Yamaguchi (Reason) He explain very clear and attractive

● All good

●1. Flood Control Plan and Operation (Reason) Useful for flood control management
2. Environmental Impact of Dams (Reason) Need to maintain the environmental condition
3. Sediment Management in Reservoir (Reason) It becomes serious problem in my country.

●1. Matsumoto (Reason) experience and good understanding

2. Yamaguchi (Reason) lecture was delivered well

●1. Matsumoto (Reason) lectures based on his real experience. It made me to easily understand.
2. Yamaguchi (Reason) His lecture was well prepared.

●1. Prof.Sumi (Reason) clearly explain sediment management
2. Dr.Yamaguchi (Reason) clearly explain dam construction
3. Dr.Amano (Reason) clearly explain dam reservoir issues

●1. Dr. Matsumoto (Reason) he explain us the purpose of dams in Japan very well.
2. Dr. Amano (Reason) he explains us the impacts of dam construction as well as the importance in a very comparative way.
3. Dr. Umino (Reason) he explain us the dam purpose specially dams for flood control in Japan .

Q2-3 Please fill in the name and the reason of **the best 3 lectures (or lecturers) in "Control Measures for Landslide & Debris Flow"**

Rank 1	Rank 2	Rank 3
Dr. Fujisawa	Dr. Ishii	Dr. Tsunaki
Dr. Yoshimatsu	Dr. Takanashi	Dr. Ikeya
Training of Development of Procedures for Sediment Disaster Warning and Evacuation (Dr. Takanashi)	Dr. Fujisawa	Dr. Ikeya
Mr. Watanabe	Prof. Ishikawa	Dr. Ikeya
Dr. Ikeya	Dr. Okubo	Dr. Fujisawa
Dr. Tsunaki	Dr. Fujisawa	
Application of Sabo (Dr. Ikeya & Dr. Hara)	Survey and Emergency Response for Landslide (Dr. Fujisawa)	Dr. Takanashi
Dr. Fujisawa	Mr. Watanabe	Dr. Takanashi
Mr. Watanabe	Dr. Fujisawa	Dr. Takanashi
Mr. Watanabe	Dr. Fujisawa	Dr. Ishii
Dr. Fujisawa	Dr. Ishii	Dr. Tsunaki

●1. Dr. Fujusawa (Reason) Gave good examples on how to survey and emergency measures landslide areas.
2. Dr. Ishii (Reason) Good presentation on the topography and characteristics of landslides, he also explained his reaserch work in PWRI very well
3. Dr. Tsunaki (Reason) Gave good example and practical procedure for stability analysis

●1. Dr. Hiroyuki Yoshimatsu (Reason) Good, well prepared study materials
2. Dr. Takanashi (Reason) Very Good Presentation
3. Dr. Hiroshi Ikeya (Reason) Very Good Presentation

●1. Training of Development of Procedures for Sediment Disaster Warning and Evacuation
(Reason)This lecture is a very useful lecture, which showed us the practical technique about disaster management.

2. Dr. Fujisawa (Reason) Taught us many of his experiences about maintenance measures for roads and reservoirs in landslide areas
3. Dr. Ikeya (Reason) Explained the sabo engineering very clearly

● 1. Masayuki Watanabe (Reason) His lecture combined technology with sustainability
2. Yoshiharu Ishikawa (Reason) Covers the techniques of debris flow very well.
3. Hroshi Ikeya (Reason) Explain the Case study very well.

● 1. Dr.Ikeya (Reason) sabo works in arid area was interesting
2. Prof. Okubo (Reason) good explanation
3. Dr.Fujisawa (Reason) good explanation

● 1. Dr.Tsunaki (Reason) He has very good effort to explain
2. Dr. Fujusawa (Reason) Attractive

● All good (Reason) : because every lecture give us different topic of lectures and the lectures is important

● 1. Application of Sabo Work (Reason) Useful for sediment control plan
2. Survey and Emergency Response for Landslide (Reason) Lessons learn from this lecture
3. Dr. Takanashi (Reason) The lecture materials are good enough.

● 1. Fujusawa (Reason) inspirative lecture
2. Watanabe (Reason) experienced & well understood of the lecture
3. Takanashi (Reason) Including practicing

● 1. Watanabe (Reason) His lectures based on his real experience, easy to understand
2. Fujusawa (Reason) Good intention to give a lecture
3. Takanashi (Reason) The lectures include some practice

● 1.Mr.Watanabe (Reason) contains full of Prof's informative experience
2.Dr.Fujisawa (Reason) contains full of informative field experience
3.Dr.Ishii (Reason) clearly explain the definition of landslides

● 1. Dr. Fujusawa (Reason) during his lecture he explain us not only the causes and c ounter measures of land slide problems he also explain us how to detect land slide problems .
2. Dr. Ishii (Reason) he explained us the characteristics of landslides with the help of his practical experience.
3. Dr. Tsunaki (Reason) he gave us good explanation about landslide analysis

Q3 If you think there are **any subjects of lectures to be added or deleted** to the course, please describe.

- Topic on '*Practical and Small Scale Sabo Structure*' such as the Debris Flow Breaker Structure we constructed in the Philippines, under the pilot demonstration activity and funding of ADB and cooperation between ICHARM and my office FCSEC should be included as one topic in the future. If there is opportunity, I would like to give lecture on this debris flow dewatering structure which is not only cheap but also effective in breaking debris flow and can be viably promoted to our

countries. The principle here is Sabo works need NOT be expensive structure to stop debris flow in a torrent valley.

- I think all subjects should not be compulsory. Here we have to attend all the classes and there are many assignments. It would be better if some subjects are kept optional. As example I can say, we have two courses Sustainable Reservoir Development & Management and Control Measures for Landslide & Debris Flow. We have to attend all the classes and have to prepare two report and presentations. But we have to take one subject we have concentrate well and the report and presentation should be better.
- Yes, it is better and can give us very clear explanation if we can visit dam in Japan and how it is work.
- This programs study was contained many good material, but the problems is in the times (very limited). I cannot expand and study deeply my new knowledge in Japan because every day we have much new knowledge.
  Actually now I have many good material and knowledge to bring to my countries, and hopefully can be applied in the next future.
- During the short period, we have learnt many subjects but all subjects are useful for us.
- The method of generate the snake line for landslide and debris flow should be included in the Control Measures for Landslide & Debris Flow subject.

[Others]

Q4 If you have any requests and comments for the course, please give us your opinions freely.

- I have this one special request to ICHARM and JICA. For this year, ICHARM tailored fit the topic 'Sustainable Reservoir Development & Management' around a new book titled 'Dams in Japan' (published 2009). Same applies with the topic 'Control Measures for Landslide and Debris Flow' which is an offshoot from the book 'Sabo Works in Japan'. My opinion is, the lectures of respectable professors and experts gave us are supplementary to these two good reference books. For this reason, I am earnestly requesting ICHARM to provide us these good books which we can bring home to our offices - not for our personal use - but to be placed in our office library for reference.
  Allow me to cite our case in the Philippines, my office the Flood Control and Sabo Engineering Office is the repository of all information and maintains a library on Flood Control, River Management, Dam Management, Technical Standards and Guidelines, and Sediment Related Disasters Mitigation Works in the Philippines. I'm sure these two (2) wonderful books will be a welcome source of information not only for our work, but also for young (new) engineers who want to learn about dam engineering and Sabo engineering. I hope you find merit in this request.
- Some field visits to see landslide prone areas and reservoir development should be included in order to get students the knowledge with the practical background.
- After 6 months study, I think sometimes we learned too more theoretical knowledge, but don't know how to use these knowledge into our daily work. Because most of us are engineers, not theoretical researchers, we need more practical knowledge, such as hazard mapping, inundation analysis, which is more useful to us. We need more field trips, which not only can help us more easier understand how to use theoretical knowledge, but also can help us know more about Japanese people and culture, and also Japanese life styles. Also we need more reference books.
- I think this type of evaluation is not good for the lecturers who give only one or two lectures. After long time we even forgot his name. So to get the actual performance evaluation, the evaluation shall be done every day after class. That will allow students to evaluate the lecturer with fresh experience.
- There should not be very long gap between ending of a subject and its examination.
  During the self study period (days without classes), students should be allowed to choose their individual bus schedule for coming and leaving ICHARM.

- On the Self study it is better for me to arrange my time by myself, because sometimes I am working on the night until morning and it is difficult to me working on the day if we should take a first bus to go to ICHARM and second bus to return.
  ICHARM and their team have been prepared well this course.
- If we can visit to learn about the some landslide & debris flow region which will be give us more understanding about the characteristic, emergency response, warning ,evacuation system and prevention works of landslide and debris flow.
- It is difficult for me to complete this evaluation because some subjects already finished for a long time so that I cannot remember some of the lecturers. It is better to do the evaluation immediately after the end of each class.
- Finally we have time to focus on our thesis from now.

参考資料 5-5

第 5 回アンケート結果（2010 年 6 月実施）

Interim Course Evaluation

3rd June, 2010

Q1 As for the Master's thesis, if you have some comments, please describe freely.

- Our examiners for thesis have been finalized. Now one additional person, who is also one of the examiner, is attached to every student. Student can consult with him about the thesis in addition to his supervisor. It is a very good initiative but it would be better if we got this facility earlier. I think from next year this should be finalized early stage of the thesis.
- From the beginning of the class, students should be given access to the E-journals via internet and the process of accessing the E-journal should be demonstrated. Students should be encouraged to discuss about the journals so that they can get new ideas for their thesis work.
- A researcher should be assigned to each students from the beginning who can help the student or introduce to some other researcher in case the field of interest of the student is different.
- For the Master's thesis, I think the problems I encountered are lack of reference materials about my thesis topic. The resource I can use is only through the internet. Sometimes I need to find some papers, but only can find the abstract, cannot find the complete paper. Cannot find suitable and enough knowledge is a big problem. And I also hope ICHARM can provide some useful software for us.
- There is a paper attached to the whiteboard in a student room which contains the information of the availability of each supervisor. This is very useful for students in arranging time to discuss with their supervisor. But, there is no schedule of Dr. Sayama on that paper. Would you please consider to put the schedule of Dr. Sayama, it will be very useful. Thank you,
- For my master thesis, I still fight to do the best. I know my English is poor, but I have to finish my Master Course. Our lecturers and my Supervisor is very good persons and very good effort to teach us. And also about the internet connections in ICHARM is very useful, we can search many paper in many resources, because in TBIC we cannot access the internet in good connections (very slow).
- We visited the study tours while doing our research. It is better for us because we got a lot of knowledge concerning with disaster prevention works as well as relaxing stress.
- For the Master's Thesis, I have now consolidated all the necessary country data to generate the indixes (indicators) for flood hazards, basic vulnerability, exposure and coping capacity. I am now preparing the presentation material for the 3rd Presentation.
- I have one comment regarding the Master's thesis. Many of us use FORTRAN in the thesis. The problem is that during the development of FORTRAN code, the FORTRAN experts are not available for us to consult when we have the problem with the coding. So, it takes much time to solve the problem and some time we cannot find the solution. ICHARM should consider this problem for the next year training course.
- Field visits should not be scheduled just before interim presentations.

Q2 If you have any requests and comments for the daily life in ICHARM, please give us your opinions freely.

- At present I do not have any special request for daily life in ICHARM.
- The life in ICHARM is very good. No further comments.
- ICHARM already prepare everything for our master course. During study here, since September 2009, generally, nothing that make me feeling bad. Everything is good for the daily life here.
- ICHARM has been steadily upgrading the system to improve this Master Course and we are fortunate to be able to study and live in this very conducive environment. I have no further request and comment.
- In my opinion, the daily life in ICHARM is already good.