

M.Sc. on Integrated Drylands Management



Improving Water Productivity in Dryland Agricultural Systems

2014 - 2015



2014-2015 Programme Overview

The Joint Master's Degree (MSc) Programme on Integrated Drylands Management brings together different expertise and scientific resources of the partner institutes to build advanced human capital, generate and adapt global knowledge for local solutions in drylands. The programme provides young professionals and scientists an international perspective on integrated resources management approaches in drylands and allows them to gain practical experience in different dryland countries. Throughout the programme, a strong emphasis will be placed on multidisciplinary approaches.

The MSc Programme will offer two components:

- A short intensive course
- Field research leading to the development of a Master's thesis

The three-week course work will focus on the international dimension of dryland management and a range of research methods. An international team of selected experts from all partners and their networks will provide a balanced mix of lectures and seminars.

The six month field and laboratory research will be conducted under the supervision of one of the programme partners. Upon completion of the MSc Programme, students will receive a Master's Degree from their home university and a certificate from UNU.

Typically, the graduates from the MSc Programme serve in government departments and agencies (e.g., those dealing with agriculture, forestry, natural resources management, and combating desertification), teaching positions in institutions of higher learning, research institutions, and doctoral research programmes.

Programme Schedule

October 5 - 24, 2014

Course Work at ICARDA

- Arrival in Amman, Jordan, Oct 2014
- Course work at ICARDA: field trips, practical exercise, seminars
- Finalization of research proposal

Late 2015 / Early 2016

Graduation

- Final submission
- Thesis defense

November 2014 - October 2015

Field Research and thesis preparation

- Data collection and analysis
- Submission of draft thesis to supervisor

Online:
inweh.unu.edu/m-sc-drylands

Course Work

In 2014, the intensive short course will be held in Amman, Jordan from October 5 - 24. International experts from all partner organizations and their networks, representing different disciplines in drylands management, will facilitate a mixture of lectures, seminars, laboratory applications and field visits to the arid zones of Jordan.

The focus of the course work will be on research and practices for combating desertification, and will include interdisciplinary aspects such as climate change, integrated water and land management, combating desertification, and economics aspects.

The lectures will further cover a wide range of disciplinary and inter-disciplinary subjects on:

- Degradation and development of arid ecosystems, including mainly aeolian desertification (status, process, mechanism, mitigation, monitoring and assessment, etc.);
- Dryland ecology (soil and water processes in typical steppes, desert steppes, cold deserts, oases, etc.);
- Climate change (in cold and arid regions); and,
- Dryland economics (valuation, management and strategies for investment, monitoring and evaluation).

*Please note that in order to facilitate the visa application process for studying abroad in Jordan, applicants must hold a passport with a validity of more than 6 months.

Admission Requirements

Admission is based on the following criteria:

- Applicants must already be registered in a Master's degree programme at one of the Programme partner institutes and have completed their basic course work.
- Applicants registered in a Master's programme at an accredited university outside the Programme partners may be eligible to apply if they have completed their basic coursework, and can establish a link with a Programme partners for their field research and thesis work which will be undertaken jointly with their current supervisor. Such applicants should contact the interested Programme partner institute directly to explore options and arrangements.
- Applicants must demonstrate a proved competence in relevant research methodologies, laboratory and computer skills.
- Applicants must demonstrate proof of proficiency in English (oral and written).
- Applicants must submit a research proposal of 10 pages, whose priority aligns with that of programme partner who will host the proposed research.
- Working experience in dryland management is desirable.

Tuition Fees and Scholarships

Tuition fee is US \$5,000, including costs of course delivery, supervision, and examination. The fee does not include travel costs between the country of the student's origin and locations of the MSc Programme partners, and costs of living at the MSc Programme partners. Information on local food, accommodation, health insurance, and other logistical matters will be available from MSc Programme partners. The tuition fee will be waived for students who are Fellowship recipients.

A limited number of Fellowships will be provided to qualified candidates from developing countries on a competitive basis. These fellowships will cover the travel costs between the country of origin and IRA, CAREERI, ICARDA, and TU, as needed. Japanese students may only apply for TU fellowships.

During the course work in 2014, ICARDA will house the students with full boarding and lodging in a suitable hotel in Amman, Jordan. During laboratory research work, TU will provide non-Japanese students with allowance for accommodation and meals in Tottori, Japan.

*No financial provisions, logistical assistance or housing facilities will be made available for family members of participants.



Field Research and Dissertation

As part of their application, students need to submit a research proposal and two letters of recommendation, one of which must be from their research supervisor, to the MSc Programme Committee for approval.

The student will need to demonstrate that the proposed field research involves *in-situ* field work and gives due consideration to community involvement. Partners will provide limited funds for students to carry out field research by involving them in ongoing research programmes.

In addition to a principal supervisor from their home university, the MSc Programme student will have an associate supervisor from the partner institute that will host his or her field research work.



Field Course Schedule: October 5 - 24, 2014

Week 1 October 5 – 11
(break on Friday, October 10)

Topics

- Soil-water-plant relationship
- Photosynthesis and plant water relations
- Field soil moisture measurement and monitoring
- Computation and analysis of field water balance
- Soil nutrient availability and dynamics
- Irrigation systems (surface and modern)
- Scheduling and performance evaluation

Field visit to Jordan Valley irrigated agriculture research station (Saturday)

Week 2 October 12 – 18
(break on Friday, October 17)

Topics

- Supplemental irrigation definition and concept: when to irrigate and how much
- Water harvesting – concept, components, infiltration and runoff processes
- Methods of water harvesting – planning, designing and managing water harvesting systems
- Concept and practices of soil and water conservation and land management
- Land management and soil erosion
- Salinity development and management
- Drainage principles and management

Field visit to rangeland water harvesting sites (Saturday)

Week 3 October 19 - 24

Topics

- Water productivity concept and improvements
- Economics of water productivity
- Design and analysis of water resources experiments
- Application of GIS and remote sensing in water and land problems solving
- Watershed modeling with SWAT
- Rangeland rehabilitation and monitoring
- Conservation agriculture in dry lands systems



Notes

- Trainers will be from ICARDA HQ and regional offices, university faculty and senior scientists in the national institutions
- There will be excursion tours on Friday, October 10 and 17
- Saturday field visits will be daylong with lunch served in the field
- Third week is devoted to multidisciplinary topics with ICARDA scientists from different programs lecturing
- There will be a mix of interactive learning sessions, quizzes and group presentations to evaluate the trainees
- Trainees shall do assessment of the course, give feedback and recommendations, and evaluate trainers at the end of the course
- Trainees, in addition to those of the MSc Program, will be invited from other programs and countries where ICARDA operates

How to Apply

The following supporting documents* must be submitted together with the completed and signed application form (application form available at <http://inweh.unu.edu/msc-drylands>)

- For applicants registered with a Programme partner, a letter of nomination from your supervisor/university where you are registered certifying completion of basic course work;
- For applicants registered at an accredited university outside the Programme partners, a letter of nomination from your supervisor/university where you are registered certifying completion of basic course work and clarifying the link between your university and one of the MSc Programme partners for joint supervision of research and thesis work;
- A certified copy of academic transcripts for each institution attended;
- An original, detailed MSc research proposal of 10 pages clearly outlining the problem statement, literature review, research question, methodology, expected results, workplan, and timetable;
- Two (2) original supporting letters of reference, one (1) of which must be from your current supervisor;
- Evidence of English proficiency (e.g., TOEFL score, English certificate, etc.), where English is not your first language.

*Documents which are not originally in English must be accompanied by an official English translation.

The deadline for application submissions is **June 30, 2014**. Submissions must be post-dated by this date. Incomplete applications will not be considered. Please send your fully completed application form and supporting materials by email, fax, or post to:

MSc Programme Committee
United Nations University - Institute for Water, Environment and Health (UNU-INWEH)
175 Longwood Rd. South, suite 204
Hamilton, Ontario L8P 0A1 Canada
Fax: +1 905 667 5510
Email: contact.inweh@unu.edu



The Joint Master's Degree (MSc) Programme on Integrated Drylands Management is offered jointly through the partnership between the United Nations University (UNU), Institut des Régions Arides (IRA), Cold and Arid Regions Environmental and Engineering Research Institute (CAREERI), the International Center for Agricultural Research in the Dry Areas (ICARDA), Institut National Agronomique de Tunisie (INAT) Tottori University (TU), the Global Mechanism (GM) of the United Nations Convention to Combat Desertification (UNCCD), and the International Center for Advanced Mediterranean Agronomic Studies (CIHEAM) - Mediterranean Agronomic Institute - Bari.

Contact Us

UNU: Dr. Richard Thomas
175 Longwood Rd. South, suite 204
Hamilton, Ontario, L8P 0A1 Canada
Tel: +1 905 667 5490
Fax: +1 905 667 5510
Email: richard.thomas@unu.edu

IRA: Dr. Mohamed Ouessar
4119 El Fjè Medenine, Tunisie
Tel: +216 75 633 847
Fax: +216 75 633 006
Email: ouessar.mohamed@ira.rnrt.tn

CAREERI : Dr. Wang Tao
Lanzhou 730000, P. R. of China
Tel: +86 931 827 5669
Fax: +86 931 827 3894
Email: wangtao@lzb.ac.cn

ICARDA: Dr. Theib Oweis
15 Khaled Aba Dalbough Street
Abdoun Al-Shamah (North)
Amman, Jordan
Tel: +962 59 031 20
Email: t.oweis@cgiar.org

Tottori University: Prof. Atsushi Tsunekawa
1390 Hamasaka
Tottori 680-0001, Japan
Tel: +81 857 21 7036
Fax: +81 857 21 7214
Email: tsunekawa@alrc.tottori-u.ac.jp

GM of UNCCD: Mr. Simone Quatrini
UN Campus, Room LEU-1414
Platz der Vereinten Nationen 1
53113 Bonn, Germany
Tel: +49 (0) 228-815-2860
Mobile: +49 (0) 173 278 6901
Email: s.quatrini@unccd.it

CIHEAM - Bari: Dr. Nicola Lamaddalena
Via Ceglie 9
70010 Valenzano (Bari), Italy
Tel: +39 080 4606234
Fax: +39 080 4606206
Email: lamaddalena@iamb.it

Photo Credit: Public Domain Pictures, www.pixabay.com (Cover)

