Scholars in HeAlth Research Program (SHARP)

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Background

The Scholars in HeAlth Research Program (SHARP) is a joint FM and FHS curriculum that consists of a 12 credit summer certificate, open to graduates of health fields, as well as a 40-credit Master's degree. Credits earned for the SHARP certificate can also be credited towards this new Master of Science in Health Research or towards other Master's degrees at FM, FHS, FAFS, or HSON.

SHARP provides graduates with the required foundation to pursue a career in clinical and translational research focusing on Non-Communicable Diseases (NCDs), a major cause of mortality and morbidity in the region. It will help create and sustain a cadre of highly trained researchers who will conduct patient-oriented and population-oriented studies on NCDs. It will also equip trainees with management and leadership skills needed to become “change agents” and lead research groups, academic departments, or other health care settings. Management and leadership courses will be offered in collaboration with faculty at the Olayan School of Business.

Mission

The Mission of the Scholars in HeAlth Research Program (SHARP) at the American University of Beirut (AUB) is “To provide superior didactic education complemented with state-of-the-art interactive and practical training in health research, with a focus on Non-Communicable Diseases research. It is intended for physicians and other health care professionals, to improve and advance the health care agenda for Non-Communicable Diseases in Lebanon and the region”.

SHARP Summer Certificate Program Curriculum

The SHARP summer session is a 12 credit module that provides the essential foundations in quantitative methods and fundamental skills to conduct research. The core disciplines include epidemiology, biostatistics, research ethics, and library sciences/informatics. These are complemented with a practical hands-on training course in the analysis and reporting of large health related datasets in NCDs.
SHARP Master of Sciences in Health Research

Curriculum

Students who complete the SHARP summer Program are eligible to enroll in the SHARP Master's degree provided they satisfy all admission requirements, including successful completion of the summer certificate program. This Master of Sciences degree builds on the foundations acquired in the summer certificate program that are pre-requisites and constitute an inherent part of the Master's degree. The 40 credits Master's degree requirements can be completed over one year (medical graduates only) or two years (all other disciplines), and the total number of allowable credits per semester is 16 credits, unless otherwise approved by the Graduate Studies Committee. The degree therefore consists of an additional 14 credits in required courses, including Clinical Trials and Systematic Reviews/Meta-analyses, the four credits Longitudinal Seminar series spanning over the academic year, four credits of electives, and the six credit Thesis. The Thesis is a mentored research project culminating in the completion of a project revolving around Non-Communicable Diseases. In compliance with AUB requirements, scholars will also sit for a zero credit Comprehensive Exam course (pass/fail).

Both the summer certificate and the Master of Sciences degree are jointly granted by FM and FHS.

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<thead>
<tr>
<th>SHARP Summer Certificate Courses</th>
<th>Credit Hrs.</th>
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<tr>
<td>SHARP 300 Principles of Epidemiology</td>
<td>2</td>
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<td>SHARP 320 Design and Analysis of Epidemiological Studies</td>
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<td>SHARP 310 Biostatistics</td>
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<td>SHARP 315 Introduction to Research Ethics and Responsible Conduct of Research</td>
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<td>SHARP 325 Library Science and Informatics</td>
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<tr>
<td>SHARP 330 Analysis and Reporting of Large Clinical Datasets I</td>
<td>2</td>
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<td><strong>Total 12</strong></td>
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<th>Required Fall/Spring Courses</th>
<th>Credit Hrs.</th>
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<tr>
<td>SHARP 321A Advanced Topics in Clinical Trials</td>
<td>1</td>
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<tr>
<td>SHARP 340 Advances in Non-Communicable Disease Research</td>
<td>2</td>
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<tr>
<td>SHARP 350 Longitudinal Research Seminar Series I/I</td>
<td>4</td>
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<tr>
<td>SHARP 322CA Systematic Review and Meta-analysis</td>
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<tr>
<td>EPHD 321 Design and Analysis of Clinical Trials</td>
<td>2</td>
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<td>HMPD 318 Policy and Decision Making in Health Care</td>
<td>3</td>
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<td>MNGT 306 Leadership and Behavior in Organizations</td>
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<td>SHARP 400 Research Thesis</td>
<td>6</td>
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<td>SHARP 395A/395B Comprehensive Exam</td>
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<td><strong>Total 24</strong></td>
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### Course Descriptions

**SHARP 300  PRINCIPLES OF EPIDEMIOLOGY**  
*11.3; 2 cr.*  
A course in principles, concepts and application of epidemiology tools relevant to public health practice. The course consists of lectures, assigned readings and complimentary practical sessions. It will cover the basic principles of epidemiology such as disease occurrence, distribution and determinants, different epidemiologic study designs such as cross-sectional, case-control, and cohort studies; with applications on sources of data, indices of morbidity and mortality, measures of association, bias, confounding and interaction. *Offered only in Summer. Equivalent to EPHD 300.*

**SHARP 320  DESIGN AND ANALYSIS OF EPIDEMIOLOGICAL STUDIES**  
*17.5; 3 cr.*  
The course introduces elements and methodological issues related to study design, data analysis, and inference in epidemiological research. Cohort and case-control studies are the focus of discussion. Problems of exposure and disease definitions, confounding, effect modification, matching, bias, interaction, and misclassification are considered. *Equivalent to EPHD 320.*

**SHARP 310  BIOSTATISTICS**  
*22.11; 4 cr.*  
This course is an introduction to basic statistical techniques applied to health sciences and related fields. The objectives are twofold: descriptive statistics which encompass techniques for organizing and summarizing data, and inferential statistics from estimation, to confidence interval, and testing of hypothesis. Applications include probability distribution, comparing population means (t-tests) or proportions (X2 squares) for data obtained from paired or independent samples, significance testing, sample size calculation and power, stratified and matched analyses, and oneway ANOVA. Also, it introduces simple linear regression, correlations, logistic regression and nonparametric methods for data analysis. Focus will be on problems that are commonly encountered in health services and biomedical research. *Offered only in Summer. Equivalent to EPHD 310.*
SHARP 315  Introduction to Research Ethics and RCR *8.1; 1 cr.
This course recaps the history of ethical principles, the development of research codes of conduct and ethical practices and familiarizes investigators and faculty members with the different kinds of ethical issues that they might come across throughout their careers; it allows scholars to reflect critically about what it means to be an ethical and responsible researcher. The course format is a mixture of didactic lectures, online training modules (CITI Responsible Conduct of Research modules), case-studies, clinical research practicums and discussions, interactive lectures that are Power Point based, small discussion groups, audios, video prompts (real footages and films), simulations (e.g. mock IRB) allowing scholars to role play followed by discussions. Offered only in Summer.

SHARP 325  Library Science/ Informatics *4.0; 0 cr.
This introductory course spans two 2-hour session, and focuses on effective and efficient searching skills of bibliographic medical and health-related databases with various search options/techniques that the OVID interface allows using MeSH terms, explode functions, keyword searching in title, abstract, and subject headings, adjacency, and publication types, in addition to Boolean operators and truncation using MeSH terms. MeSH is used by the indexers at National Library Medicine to describe the content of an article. These MeSH terms are also organized in a hierarchy or tree structure, and this would allow users to explode a MeSH to ensure that narrower MeSH terms are also included in the search. Training format is a mixture of demonstrations, hands-on exercises, and clinical scenarios. Offered only in Summer.

SHARP 330  Analysis and Reporting of Large Clinical Datasets I *4.9; 2 cr.
This course will put into practice the statistical analysis and other computing skills introduced to scholars in EPHD 300/ SHARP 300, EPHD 310/ SHARP 310 and SHARP 325. The training format is a mixture of demonstrations, hands-on exercises, and clinical scenarios. The course will simulate previously executed/published analyses on previously collected de-identified health research datasets. Scholars will go through the entire process experience of data handling, hypothesis-driven analysis design and culminating with the execution of statistical analysis (modeling) and presentation of results. In addition, this course will use existing datasets to familiarize scholars with commonly used health data analysis methods that are otherwise not covered in the MS/MPH curriculum. These will include survival analysis methodology, Cox regression multivariate modeling of survival data, approaches to matching of study cohorts and mathematical model simulation (predictions)/ risk modeling. Offered only in Summer.

SHARP 331  Analysis and Reporting of Large Clinical Datasets II 1.2; 2 cr.
This course, in large part, takes the form of a single trainee research project on a clinical dataset that is done with direct supervision of the course coordinator/instructor and possibly SHARP investigators and mentors. Proposed research questions/projects are expected to be sufficiently novel, of clinical relevance, and well designed and executed analyses that should have publication potential. Students are expected to submit their work in abstract form to a scientific conference, present their work internally as a seminar, and work toward a manuscript.

* as per the full seven-week summer session (each session + 2 hours)

Graduate Catalogue 2014–15
SHARP 340  Advances in Non-Communicable Diseases Research  2.0; 2 cr.
The course is an opportunity for students to be acquainted with researchers in Lebanon active in the field, to appreciate the scope and findings of the studies conducted in Lebanon and the region, and to lead in the write-up of a research study protocol. The course will also provide an overview of the following components pertaining to each of the selected NCD topics: (1) Public health importance of the topic/its burden; (2) Epidemiology (prevalence, patterns) at the local, regional and global level; (3) Theoretical and practical methodological challenges and opportunities in the conduct of epidemiologic studies; (4) Most recent findings in NCD research conducted in Lebanon and the region; (5) Public health strategies for the prevention and control of NCDs.

SHARP 322CA  Systematic Review and Meta-analysis  1.0; 3 cr.
The course is structured around the steps of executing a systematic review of trials of interventions: specifying the PICO question, searching for potentially relevant articles; selecting eligible studies; abstracting data; assessing risk of bias, conducting a meta-analysis; grading the quality of evidence; and interpreting results. Weekly assignments are designed to guide students in the production of a systematic review. The final paper consists of a report of the systematic review suitable for publishing in a peer-reviewed journal. The course examines advances in Non-Communicable Disease (NCD) research and risk factors with special focus on methodological challenges and opportunities.

SHARP 321A  Advanced Topics in Clinical Trials  3.0; 1 cr.
This is an advanced course for SHARP students to clinical trials. It provides a range of topics in clinical trials which are complementary to the EPHD 320 (Design and Analysis of Clinical Trials).

EPHD 321  Design and Analysis of Clinical Trials  2.0; 2 cr.
A course that focuses on issues in the design and organization of randomized controlled clinical trials: ethical and legal issues, patient selection, recruitment, masking and randomization, endpoint definition, protocol development and statistical analysis.

SHARP 500  Elective in Research Ethics and Responsible Conduct of Research  1.0; 1 cr.
The Salim El-Hoss Bioethics and Professionalism Program. This program organizes an average of 1-2 regional two-day conferences, and two national one-day conferences each year. In addition to the LSS course, MS students have the option of this one-credit elective in Research ethics/RCR. Students will have to attend one regional two-day conference or two national one-day conference of their choice. Topics of previous years included Controversies in Research Ethics; Public Health—an Ethical Imperative; Ethics of Organ Donation; Stem Cell Research: Current Controversies; Ethics and Medical Reliability.
SHARP 350  **Longitudinal Research Seminar Series I/II** 0.1; 4 cr.
The Seminar Series covers a variety of topics not fully covered in other courses but key to the career development of health research investigators. It is comprised of seminars, lectures, workshops and Journal clubs organized by the collaborating schools, including the HRPP and the Research Education Unit, and by CRPH at FHS. Invited speakers from AUB or local/regional/international institutions will cover research ethics (part of the Ethics Matters Initiative weekly seminars), NCD-research seminars, and cutting edge research on population, health and socioeconomic issues in Lebanon and the region. The seminars will also include a mock study section grant review, presentations by successful investigators at AUB or AUB Alumni, or by leadership in industry, and funding agencies. The first semester is formatted as a series of separate but related seminars, whereas in the second semester, the scholars will participate in these seminars through presentations of practicums, progress reports on their on-going projects, and seminars on special issues relating to their research projects.

SHARP 395A/395B  **Comprehensive Examination** 0 cr.

SHARP 400  **Research Thesis** 6 cr.
The research thesis component of the MS Training Program will implement a mentor-scholar model. The thesis research track for the SHARP MS degree program will be flexible provided its primary focus is related to NCDs. The focus would be clinical trial based, pertaining to NCD related outcomes or clinical epidemiology, or to formulation of a health policy on obesity, or hypovitaminosis D. Typically, six credit hours will be given for the successful completion of the mandatory research thesis. However, if the thesis research is particularly extensive, three additional credits may be allocated based on a Thesis Committee recommendation that must be approved by the Program Executive Committee and local AUB-TAG.