Erasmus MC
Netherlands Institute for Health Sciences

Research Education in Health Sciences and Clinical Research

Study Guide 2016-2017

Master of Science in Health Sciences (70 ECTS)
Research Master in Health Sciences (120 ECTS)
Research Master in Clinical Research (120 ECTS)
Doctor of Science programmes (70 ECTS)

Specialisations

Clinical Epidemiology
Epidemiology
Genetic Epidemiology
Health Economic Analysis
Public Health
Pharmaco-Epidemiology

Erasmus University Rotterdam
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Important updates and corrections for version 2, October 11, 2016:

- p. 9: Institute of Medical Education Research Rotterdam (iMERR) as affiliated partner;
- p. 11: added information about communication via Osiris, student email address and using student number;
- p. 12: added information about doing electives at other schools or institutes;
- p. 13: adjusted information about course attendance;
- p. 15 and 16: added deadline for research for both students and tutors (these deadlines have been added in all the time tables throughout the study guide as well)
- p. 17: added information on requests for the Examination Board;
- p. 30: course code Eu2P-D5M1 added to 'Introduction to Benefit-Risk Assessment and Pharmacoeconomics Communication in Decision Making ' course;
- p. 35 and 38: EWP25 replaced by EWP10;
- p. 36 and 39: EWP10 replaced by EWP24 AND ESP28 taken out of 2nd ESP;
- p. 42: ESP28 taken out of 2nd ESP;
- p. 45: number of ECTS for RM-RES2 (research period year 1) has been corrected. It is 1.4 ECTS less than stated in version 1 for RM HS students who started in 2016;
- p. 62: information added about final exam information in Canvas and application;
- p. 64: number of ECTS for MED-RES2 (research period 1) has been corrected. It is 1.4 ECTS less than stated in version 1;
- p. 67: ESP programme summer 2016 has been corrected AND number of ECTS for MED-RES2 (research period 1) has been corrected (as on p. 65);
- p. 73: in 5.3.4 corrected information on where to download the PEP;
- p. 74: number of ECTS for RM-RES2 (research period 2) has been corrected. It is 1.4 ECTS less than stated in version 1;
- p. 77: number of ECTS for RM-RES2 (research period 2) has been corrected (as above);
- p. 80: number of ECTS for MED-RES2 (research period 1) has been corrected. It is 1.4 ECTS less than stated in version 1;
- p. 83: ESP programme summer 2016 has been corrected;
- p. 84: number of ECTS for MED-RES2 (research period 1) has been corrected (as above);
- p. 90: timetable summer 2016 courses corrected (date and time ESP53 course and recommended course is an elective course);
- p. 91: corrected information about handing in research paper(s), current information is aligned with information in sub-section 2.3.6 and 2.3.7 about the research paper and research assessment.

Erasmus MC

Netherlands Institute for Health Sciences

Study Guide 2016-2017

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Every effort has been made to ensure that the information contained in this study guide is accurate at the time of publication. However, the Netherlands Institute for Health Sciences reserves the right to make changes without prior notice.

Word of welcome

Welcome to the Netherlands Institute for Health Sciences (NIHES); and to the international students: welcome to the Netherlands!

We are delighted you have chosen NIHES to study for your Master in Health Sciences or Clinical Research, or to become a Doctor of Science in Health Sciences. Over the past years hundreds of young and talented students, researchers and health professionals from around the world have preceded you. They have benefited from our challenging international research and study environment, which you are now about to experience for yourself.

At NIHES, we owe our broad, international scientific network to the collaboration between our constituent members and to the partnerships with leading universities abroad. This network gives us a faculty of highly successful experts with outstanding academic credentials. It is an honour to have leading international scientists lecture and participate in our research programmes.

This practical guide will help you find your way around. We also hope it will help you to take full advantage of connections in our network. This is what we strongly recommend you to do. Getting acquainted with the international community of health scientists, finding out about interesting research, exchanging ideas and experiences with your fellow students and faculty and, last but not least, enjoying yourself!

The entire NIHES staff sincerely wishes you a valuable and pleasant stay at the Netherlands Institute for Health Sciences.

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1. Studying at the Netherlands Institute for Health Sciences

1.1 Introduction

The Netherlands Institute for Health Sciences (NIHES) is a collaboration of twelve departments at Erasmus University Medical Center Rotterdam and Erasmus University Rotterdam sharing their specialised knowledge in quantitative medical and health research:

- Epidemiology;
- Public Health;
- Health Policy and Management;
- General Practice;
- Medical Informatics;
- Child and Adolescent Psychiatry/Psychology;
- Psychiatry, - section of Medical Psychology and Psychotherapy;
- Dermatology;
- Paediatrics;
- Plastic and Reconstructive Surgery;
- Rehabilitation Surgery;
- Institute of Medical Education Research Rotterdam (iMERR).

These departments and sections offer a range of research and training programmes in six key disciplines: Epidemiology, Clinical Epidemiology, Genetic Epidemiology, Public Health, Pharmaco-epidemiology and Health Economic Analysis. Furthermore, NIHES closely collaborates with other Research Schools at Erasmus MC. For example, both the Cardiovascular Research School COEUR and the Research School MolMed (Molecular Medicine) contribute to the Research Master in Clinical Research.

NIHES offers Master of Science degree programmes, Doctor of Science programmes and short courses. Our short courses take place each year and attract researchers and health professionals from all over the world. Because these courses also are part of our degree programmes, you will be sharing most classes with external participants. In addition, NIHES annually organizes the Erasmus Summer Programme and Erasmus Winter Programme in collaboration with Erasmus MC. Detailed information about the programmes, courses, and application and admission procedures can be found on www.nihes.com.

1.2 Programmes

The following Master of Science degree programmes are offered. These have all been accredited by the Netherlands Flemish Accreditation Organisation (NVAO) and registered in the Dutch Central Register for Higher Education Programmes (CROHO)

- The one-year, full-time Master of Science programme in Health Sciences (13 months, 70 ECTS, CROHO number 75042), available in five specialisations: Epidemiology, Clinical Epidemiology, Genetic Epidemiology, Public Health and Pharmaco-epidemiology). This programme is open to graduates with an appropriate Master's degree, and to researchers and health professionals with relevant research or working experience.
  - The part-time executive Master of Science in Health Sciences (70 ECTS) is intended for participants who wish to customize the full time programme to their own busy schedule, by spreading it over a longer period of time. It is geared towards professionals who have already authored scientific publications. There a different options: in the part-time two-year Summer School Programme (70 ECTS) the curriculum of the above one-year Master of Science programme in Health Sciences in the specialisations Epidemiology, Clinical Epidemiology, or Genetic Epidemiology is spread over three consecutive summers, two winters and electives. In addition, it is possible in all specialisations to design a personal programme that is tailor-made to fit your schedule.
- The two-year, full-time Research Master programme in Health Sciences (120 ECTS), available in five specialisations (Epidemiology, Clinical Epidemiology, Genetic Epidemiology, Public Health and Health Economic Analysis). This programme is intended for graduates with an appropriate Bachelor's degree and no prior research or work experience (CROHO number 60120).
  - Adapted Research Master programme in Health Sciences (120 ECTS) for excellent medical students at Erasmus MC. This programme is combined with the Master in Medicine at Erasmus MC.
- The two-year, full-time Research Master Programme Clinical Research (120 ECTS). This programme is intended for graduates with an appropriate Bachelor's degree and no prior research or work experience (CROHO number 60312).
  - Adapted Research Master programme Clinical Research (120 ECTS) for excellent medical students at Erasmus MC. This programme is combined with the Master in Medicine at Erasmus MC.

The one-year, full-time Doctor of Science programme (70 ECTS) is especially suited if you wish to acquire more research experience or increase your chances of qualifying for a PhD research project after your Master's. The programme is offered in four key disciplines of NIHES: Epidemiology, Clinical Epidemiology, Genetic Epidemiology, and Public Health, and leads to a Doctor of Science diploma.

1.3 How to use the Study Guide

This study guide informs current Master students (Master of Science and Research Master) and Doctor of Science students about the general rules of NIHES and gives them detailed information about the Master degree programmes and the Doctor of Science Programmes.
Chapter 2 provides general information applicable to all programmes. Programme-specific information can be found in chapters 3 to 6:

3 Master of Science in Health Sciences (MSc HS) (70 ECTS)
  3a. Executive Programme (MSc HS) (70 ECTS)
4 Research Master in Health Sciences (RM HS) (120 ECTS)
  4a. RM HS for excellent medical students at Erasmus MC (120 ECTS)
5. Research Master in Clinical Research (RM CR) (120 ECTS)
  5a. RM CR for excellent medical students at Erasmus MC (120 ECTS)
6. Doctor of Science Programmes (DSc) (70 ECTS)

Your admission letter informs you about the precise programme that you are going to follow, so you will know what chapter to consult. You can also check your degree programme in Osiris. For information about Osiris see section 2.1.1.
Note that variations to the programmes are explained in the respective parts a of chapters 3, 4 and 5. Note that the rules and regulations for these variant programmes may differ from the general rules.
Chapters 7 and 8 provide information about the graduation and the aftermath of graduation.
In the annexes, you will find contact information of the NIHES organisation, maps showing how to get to Erasmus MC and how to move around within Erasmus MC, as well as detailed descriptions of the courses offered by NIHES.

2. General Information

This chapter gives general information about the information systems, courses, research, and examination procedures and rules. Go to one of the chapters 3 to 6 to find specific information about your programme.

2.1 Information systems and communication

2.1.1 OSIRIS

Osiris is a student information system used by most faculties of Erasmus University Rotterdam. You will receive a login code for the Osiris environment.

The system is used for the following purposes:
- Application via Studielink or Osiris for Research Master students;
- Administration of students' programmes and progress (courses, research etc.);
- Administration of planned courses;
- Registration of exam results;
- General communication from NIHES to you;
- Application for elective courses.

Both you as a student as well as the NIHES administration and the programme management can access Osiris. Among other things, you can:
- check your degree programme and your related exam programme;
- get an overview of the courses in your programme;
- check your progress in your exam programme;
- check your exam results;
- see how many electives you still need to choose.

All exam programmes are given in the programme-specific information section of chapters 3 to 6 of this guide. NIHES course codes in Osiris are preceded by MCER, e.g.:
MCER.ESP01 for Principles of Research in Medicine and Epidemiology (ESP01) or MCER.EWP25-2011-for Principles of Epidemiological Data-analysis (EWP25).

2.1.2 Communication

NIHES only communicates with you via your student email address. Because of privacy, NIHES will not answer emails from other email addresses. Via your student email address we will directly have your student number available and we will be assured that we are communicating with you. When you communicate with NIHES you need to mention your student number.

2.1.3 Canvas

You will also receive a login code for the NIHES' Learning Environment, called Canvas. Apart from general information about NIHES and e.g. Teaching and Examination regulations, Canvas provides details about course locations, date and time of the lectures, time and location of examinations, reviews and resits, as well as course materials. Course information will be made available at least one week before start of a course.

2.2 Course information

In this section, general information concerning the courses is described. Examination procedures and rules can be found in section 2.4.

2.2.1 Courses

The following categories of courses and programme components are distinguished:
- Common core: the courses and programme components which are equivalent for all specialisations within your programme;
- Required: the courses and programme components which are required for your specific specialisation;
- Electives: all courses you need to elect to tailor your programme.

2.2.1.1 Common core

The common core of all Master programmes consists of the basics in study design and biostatistics, an English Language course (see below), the research proposal and research presentation. Depending on your programme the common core may contain more courses, research seminars or research components. Specific information for your programme can be found in one of the chapters 3 to 5. For DSc students all programmes are equal and courses are required or elective courses (see chapter 6).

English Language (SC01) and English proficiency test

This course is given at the beginning of the study year with the aim to enhance your learning experience during the programme. If proven necessary, you will be registered for the entire course. The course runs from August until October 2016. The course dates are published on Canvas and are communicated to starting students in July prededing the start of their programme.

All Master students are required to attend the two English proficiency tests of English Language (SC01), scheduled on Monday August, 2016 at Erasmus MC. You may be exempted from SC01 and thus the two English proficiency tests if:

- you have a diploma for Dutch pre-university education (VWO), with a passing grade for your final English examination, or;
- you have a diploma for Dutch higher vocational education (HBO), with a passing grade for your final English examination, or;
- you can prove with written, official certificates that English was the instruction language at your secondary school and at your university, or;
- you have an overall IELTS score of 7.5 or higher, or;
- you have an overall TOEFL score of 102 or higher;
- you are a PhD candidate at a Dutch university.

If based on the above you think you may reasonably be exempted from the English Language course (SC01), please send a formal request Wednesday August 5 at the latest to nihes@erasmusmc.nl, containing all the information mentioned in sub-section 2.2.5.

Introduction to R course

R is a programming language and software environment for statistical computing and graphics. The R language is widely used among statisticians for data analysis and therefore it is part of the NIHES programmes. NIHES offers a self-paced online course “Introduction to R”. This is a prerequisite for the following courses:

- Clinical Epidemiology (CE02);
- Biostatistical Methods II: Classical Regression Models (EP03);
- Courses for the Quantitative Researcher (SC17);
- Repeated Measurements (CE08);
- Bayesian Statistics (CE09).

All students enrolled in one of the above course will be enrolled in the R online course.

2.2.1.2 Required

Each programme has various specialisations with specialisation-specific required courses (see chapters 3 to 6). The required courses for all specialisations consist of:

- Introductory courses Erasmus Summer Programme;
- Required courses in the fall term directly after your introductory Erasmus Summer Programme. In these required courses you learn the basics of your specialisation.

For some programmes and specialisations there are also required courses in the spring term.

Introductory courses Erasmus Summer Programme

All NIHES students start with a compulsory selection of courses offered in the three-week Erasmus Summer Programme (ESP). You will get a comprehensive, up-to-date introduction to the principles and methods of applied quantitative research in medicine and health care. The key areas are biostatistics, clinical research, epidemiology, human genetics and health services, and public health research. Your introductory programme will be based on your programme and specialisation (see chapters 3 to 6).

The Erasmus Summer Programme is open to health professionals worldwide. Over 500 participants attend each year. You and other Master and DSc students will thus be sharing courses with health professionals with various backgrounds and specialisations.

2.2.1.3 Electives

The elective courses are meant to tailor your programme to your interests and professional needs. For the specialisation Epidemiology, in the fall term you have to choose between CE02 and HS02. All other electives of NIHES take place in the winter and spring terms and in your second Erasmus Summer Programme in the following month of August. The electives in the Erasmus Summer Programme may also be exchanged for more additional advanced courses in winter and spring. For the exact numbers of days and credits, check the relevant timetables for your programme in chapters 3 to 6 or in Osiris.

Registration for the elective courses takes place in October/November each year. Registration for the Erasmus Summer Programme is open in spring. You will automatically receive the final course list and necessary information about the registration procedures. Always check in the academic calendar on our website (www.nihes.com) if you meet the prerequisites for the elective courses you wish to attend. If you wish to take elective courses at other schools or institutes, check the information in Canvas about electives. The information for the current academic year is published in October/November.

2.2.2 Course attendance

Please note the following rules regarding attendance. A student should register their attendance on the attendance list on all course days of their courses. A student is allowed to be absent from a course up to a maximum of 20%. Attending 80% of the course is a requirement to pass the course. For further information about examinations please read 2.4.

2.2.3 Cancelling your participation in a course

If you are unable to attend a course, please notify the NIHES programme officers at the Educational Support Center by e-mail (nihes@erasmusmc.nl) at least two weeks before the start of the course. An administration fee of €50 will be charged for course cancellations made less than two weeks before the start of the course.[1]

2.2.4 Course exemptions

To be exempted from a course (or courses), you must send a formal written request at the latest two months before the start date of the course. Your request should include the following:

1. The title(s) of the course(s) you wish to be exempted from;
2. Per course a list of corresponding courses you already successfully passed in a previous programme, including course descriptions and literature used.

Please send your request to NIHES, Educational Support Center, (room Fe209, email: nihes@erasmusmc.nl). Please note that all information should be in English! We will forward your request to the Examination Board with our advice.

You will receive a decisive answer at the latest 4 weeks after NIHES received your complete request.

2.2.5 Course evaluations

Because we consider evaluation an important part of education, the evaluations in our programme are compulsory. For the fall and spring courses or other components in your programme you will receive a digital evaluation form in Canvas, which you are required to complete. Your input is very valuable and helps us to consistently improve our courses.

At the start of each year a student panel with student representatives from all programmes and specialisations is set up to evaluate the programme in general. All students receive an invitation to apply in the fall. Next to the student panel there is the Education Board of the five Research Masters of Erasmus MC. You can read more about the student panel and Education Board Researh Masters in the General Information in Canvas.

2.2.6 Recommended and additional books

With a few exceptions, all course materials are included in the NIHES tuition fee and will be made available in Canvas. Below are the exceptions, books which are not compulsory but nevertheless are recommended or additional for first semester courses:

Recommended for all courses:
- Collins Cobuild English Dictionary for Advanced Learners, The University of Birmingham, Collins Cobuild. (ISBN 10: 0003751155 / ISBN 13: 9780003751154).

Additional reading for Biostatistical Methods I: Basic Principles (CC02):
- For a general overview: “Medical statistics at a glance, A. Petrie and C. Sabin”, text and workbook (ISBN 10: 111850335X and ISBN 13: 9781118503355)
- For more in-depth background information: “Statistical Methods in Medical Research, P. Armitage, 4th edition (ISBN 10: 0632052570 / ISBN 13: 9780632052578)” or “An Introduction to Medical Statistics, Martin Bland, 3rd edition (ISBN 10: 0192632698 / ISBN 13: 9780192632692)”.

2.2.7 Computer software

Students at Erasmus University Rotterdam and Erasmus MC, can buy software such as SPSS and SAS at a discount, via www.surfspot.nl.

For students of Erasmus University Rotterdam:
- At log-in, select “Erasmus Universiteit Rotterdam” under “Hogeschool & Universiteit instelling”;
- Click on “inloggen”;
- Use your Erna ID and Password to log in.

For students with a micro section number of Erasmus MC:

[1] Please note that graduation is possible only when all invoices have been paid.

- At log-in, select “Erasmus MC” under “Hogeschool & Universiteit instelling”;
- Click on “inloggen”;
- Under “Gebruikersnaam” fill in your micro section number. Under “Wachtwoord” fill in your password for your Erasmus MC login.

2.3 Research

The NIHES programmes are characterized by a strong emphasis on research projects. NIHES covers a broad and varied range of research, from major neurological and cardiovascular diseases to the endocrine determinants of diseases; from paediatric studies to end-of-life decisions in medical practice; and from the social determinants of health and disease to the side effects of drugs. Below you find the general rules that apply to the research projects; go to chapters 3 to 6 to find specific information for your programme. Section 2.4 describes how your research project is assessed.

2.3.1 Choosing your research subject

The following is applicable for Master in Health Sciences students and DSc students: you will be assigned a personal tutor after having discussed your research interests with a programme coordinator or programme director.

To prepare for this, we strongly recommend you to take a look at the Research Themes brochure available on the NIHES website.

Please note for all Master students: you can start your research project not until you have attended all compulsory courses of the first semester. Exempted from this rule are NIHES PhD candidates and executive programme students.

2.3.2 Personal tutor

You will work on your research project under the guidance and supervision of the personal tutor assigned to you (see 2.3.1 above). All tutors are senior staff members at one of NIHES’ participating institutes. Each tutor has considerable experience (at least at PhD level) in one or more specific research subjects. You will also work with a junior tutor, with whom you will have contact more frequently and who will supervise you more directly on your research project.

On the basis of your research ambitions, the programme coordinator together with the programme director will recommend a field of research and a tutor. The intended tutor will receive your resume. From that point on, it is up to your tutor and you to arrange further collaboration, and to inform the programme coordinator of what you have agreed on.

The primary tasks of the tutor are:
- to support and supervise the student during the research phase;
- to keep track of the content of the student’s training programme;
- to meet the student at least once every two weeks for at least one hour;
- to arrange for the student to be provided with a desk and computer, usually at the tutor’s own institute or department;
- to arrange that his or her student receives all the necessary computer software, i.e. in addition to the standard software available (see below);
- the tutor receives an overview of the students course results at the start of the spring term;
- to monitor and report on the student's progress and results;
- to give feedback on the research proposal and assess the discussion research proposal;
- to assess the midterm presentation;
- to assess the student's research project;
- to confirm that the student has presented his/her research paper at the department in question;
- to assess the student’s research paper;
- to sign the research proposal and paper;
- To fill in the research assessment form and assign a grade to the research project.

Furthermore, the tutor:
- may share tasks with other tutors, with the proviso that, as first tutor, he or she at all times retains full responsibility;
- should inform NIHES (nihes@erasmusmc.com) instantly in case of any changes in contact details, e.g. institutional and e-mail addresses;
- should inform NIHES in case of problems with the student’s progress;
- should confirm his or her presence or the presence of a representative at the graduation ceremony;
- should prepare a student address for the graduation ceremony.

The following is applicable for the Master in Health Sciences students and DSc students: if your programme started in 2013 or later, you will be assigned a second assessor of your research paper, see sub section 2.3.7.

2.3.3 Practical research

As soon as you and your tutor have decided on the topic to pursue, you will start working on your research project. You will be asked to formulate a research question, formulate a research proposal and design a study. As full time Master student, you continue your research project directly after approval of the research proposal. You will write a research paper under your tutor's guidance, in the format of a draft version of a scientific publication. It may be possible for you to collect and analyse data yourself, but in most cases you will carry out your project using existing data. You will work closely together with the research group at your tutor's institute/department, and have full access to the computer facilities for data management and analysis. You will regularly meet with your tutor, especially in the beginning.

The following sub-sections provide more details about the requirements for your research project and are all assessments that are part of your research project.

2.3.4 Your research proposal[1]

All first-year Master students have to write a research proposal in collaboration with the tutor. You will receive feedback from your tutor on your research proposal, after which you will adjust your proposal and present it to your tutor and a representative of your research group. The adjusted research proposal must be handed in as digital copy, signed for approval by your tutor. Further information will be provided in Canvas.
Deadline for signed copy research proposal: Tuesday 31 January 2017.

The research proposal should comprise of a maximum of 4 pages (A4, single-spaced text) and contain the following information:
- Objectives;
- Project group;
- Study design;
- Data-collection procedure;
- Data-analysis procedure;
- Time schedule.

2.3.5 Midterm presentation of your research

All students who start in 2016 have to give a midterm presentation when they are about halfway with their research project. Further information will be provided in Canvas.

For students who started before 2016 this is not part of the assessments for their research project.

2.3.5 End presentation of your research[2]

All Master students are required to present the findings of the research project to the tutor's research group. The tutor needs to confirm that the presentation took place in the online Research Assessment Form (RAF) which he/she receives from NIHES administration. See deadline in sub-section 2.3.7.

When presenting your research findings you always need to mention:
1. The name of the institute where the research was carried out;
2. The Netherlands Institute for Health Sciences (NIHES) and Erasmus MC;
3. If applicable, the name of the student's home institute.

2.3.6 Research paper

The research project has to culminate in a draft version of a research paper, or more than one paper, including all required elements for publication in an international English-language scientific journal with an impact factor and a good reputation in its field. You will be listed as the sole author of this/these paper(s), with acknowledgement of your tutor. Any co-authors for the final version should be involved after your draft version has been approved.

When preparing your paper, please adhere to the guidelines in the so-called AMA Manual of Style published by the American Medical Association.

For Research Master in Health Sciences students (RM HS, 120 ECTS): submit your research paper digitally in Canvas **before July 3, 2017**. For medicals students please check your time table (sub-section 4a.5.3).

For Master of Science in Health Sciences (MSc HS, 70 ECTS) - and DSc students: submit your research paper (Master students) or 2 research papers (DSc students) digitally in Canvas **before July 24, 2017**.

[1] DSc students are not required to hand in a research proposal. Part-time Master of Science students have to hand in their proposal at the latest in January before their planned graduation.
[2] DSc students do not need to present their research project

For RM Clinical Research students: submit your research paper digitally in Canvas **at least 10 days before your defence**.

RM Health Sciences students who start in 2016 will have to defend their research project and paper at the end of their programme in 2018, just like RM Clinical Research students do (see above).

For all students:
- In the event of problems during the research phase, student and tutor should both report to the programme coordinator immediately. CR students should also report to their advisor.

2.3.7 Research Assessment by the tutor

All tutors will assess their students on the basis of commitment and motivation, and on the knowledge and creativity they have demonstrated during the research period.

Thus, your research project will be assessed by your tutor on:
- effort;
- motivation;
- extent of knowledge;
- creativity;
- self-guidance or level of independence.

You research paper will be assessed on:
- abstract;
- grasp of literature;
- problem statement/research question;
- analysis;
- methods;
- presentation of results;
- interpretation /discussion.

The deadline for the tutor sending in the Research Assessment Form digitally according instructions you receive from NIHES:

- For Research Master in Health Sciences students who can and want to graduate in August 2017,: **before July 10, 2017**
- For Master in Health Sciences students and Doctor of Science students who can and want to graduate in August 2017,: **before July 31, 2017**;
- For RM Clinical Research, digitally in Canvas; **at least 10 days before the defence**.

For Master in Health Sciences and DSc students who started their MSc or DSc programme in 2013 or later: your research paper will be assessed by your tutor and a second assessor assigned by the Programme Director.

The final grade for your research period is based on the assessments of your research paper and project and the final check and approval of the Science Director. For more information check the Teaching and Examination Regulations.

The final grade is classified into the following grade intervals:
- Excellent (9.5-10);
- Very good (8.5-9.4);
- Good (7.5-8.4);
- Satisfactory (6.5-7.4);
- Pass (6.0-6.4);
- Fail (1-5.9).

2.3.8 Research Seminars for Research Master students

Throughout the programme research seminars will be organized. All RM students must attend at least 12 seminars per year, thus 24 in total. A seminar should at least take one hour. Visiting conference meetings instead is also allowed and counts for one seminar per conference day, also if it takes more than one hour. On each occasion the student should collect proof of attendance, either from the organizers or from the lecturer in question.
RM students Health Sciences must register attended seminars in a seminar notebook; RM students Clinical Research in the Personal Education Plan (PEP, see chapter 5). Both can be downloaded from Canvas. The completed PEP or seminar notebook should be handed in at the NIHES administrative office at least 5 weeks before the planned graduation.

2.3.9 Shared responsibility

If you have any questions or if you are experiencing problems, please contact your tutor and the programme coordinator. RM CR students should contact the tutor and advisor in first instance. If necessary, the programme coordinator will consult with the Programme Director.

Only your programme coordinator, in consultation with the programme director, is authorized to decide on deviations from the rule that a student may start the research project only when all compulsory courses have been attended (see paragraph 2.4.3).

PLEASE NOTE: For students with a temporary Dutch residence permit the following rule applies: Dutch education institutes are obliged to inform the Netherlands Immigration and Naturalization Service (IND) about the study progress of international students with a Dutch residence permit for study purposes. Insufficient study results (<50%) may lead to the withdrawal of a student's residence permit. To comply with this rule, a NIHES programme coordinator will ask all tutors of international students half way through the programme about the students' progress in their research.

2.4 Examinations, procedures and rules

In this section general examination information is given as well as a summary of the procedures.

Most courses have an examination: usually a written examination and/or assignment(s) and/or presentations. To pass an examination, you may not score less than "pass", or obtain a grade lower than 6.0. For an overview of the courses and examinations, check the relevant information in Canvas. If a student does not meet the attendance requirement for a course (see 2.2.2), the course will not count towards the degree, even if the student passes the examination. Redoing the course or taking a substitute course may have financial consequences for you.

For courses without an examination, i.e. most courses in the Erasmus Summer Programme[1], a 'pass' grade is required (marked as 'a/p' on your grades list), which can be obtained only if you have attended the full course. If you did not attend the full course and it was a compulsory course, you need to re-attend/redo this specific course, e.g. in the upcoming year. If the course concerned was an elective course, you need to get the course credits by either redoing the course or by choosing another elective course. The introductory Erasmus Summer Programme courses are examined in your programme-specific courses in the fall term. Redoing the course or taking a substitute course may have financial consequences for you.

2.4.1 Examination policy

The examination policy is laid down in the following documents:

- Teaching and Examination Regulation (TER) Research Masters Erasmus MC for the Research Masters Health Sciences and Clinical Research;
- Teaching and Examination Regulation (TER) MSc in Health Sciences (70 ECTS) for the MSc in Health Sciences and the Doctor of Science programmes.

You can find both documents in the General Information of NIHES pages on Canvas. The most important rules are stated in 2.4.2, but we advise you to read the Teaching and Examination Regulations related to your programme. Details on the Examination Board can also be found in Canvas.

Among others the following information concerning requests for the Examination Board can be found in the TER and in General Information in Canvas:

- application for extra facilities when taking exams (because of e.g. handicaps or dyslexia);
- extension of validity of your exam results.

However, as stated before, we advise you to read the Teaching and Examination Regulations related to your programme

2.4.2 Examinations and resits

Please note the following rules and procedures regarding examinations and resits:

- A student participating in a course is automatically registered for the first examination at the end of the course. If a student cannot participate, he or she needs to inform NIHES about his or her absence in advance. Without a motivated request to NIHES in advance which is approved by one of the programme officers of NIHES, a failing grade will be registered as the result for the missed exam;
- A student needs to be present 15 minutes prior to the exam to register;
- A student's result for an exam is published within 22 working days after the date of the exam;
- Reviews are scheduled approximately 1 to 3 weeks after the exam results have been published;
- Requests for re-evaluation of a student's exam can only be submitted during the review of the exam concerned;

[1] For the following ESP courses you will need to take a written examination: the statistics courses in the Executive Programme: Introduction to Biostatistics (ESP03); Regression Analysis (ESP09); Survival Analysis (ESP28)

- A student needs to register for every resit by registering via Osiris;
- A student can resit an examination twice. For most courses a resit is scheduled in advance (see Canvas for details);
- A second resit in the same course year is offered only to those students who may be able to graduate in the upcoming month of August and have taken the first exam and resit (or whose absence was approved);
- The result for a second resit (which is the third opportunity to take the exam) is an attended/pass or fail.

2.4.3 The course programme and research project

Each student:

- may start his or her research project only when all compulsory first semester courses have been attended. (This rule does not apply to part time students or summer school students);
- is expected to show maximum application and commitment;
- must guarantee strict confidentiality with regard to information obtained during the research phase (research data, draft articles, etc.);
- will decide in consultation with the tutor on the journal to which the article will be submitted;
- submits a signed digital copy of the draft research paper to the NIHES administrative office. The digital copy should be signed for approval by the tutor, at least 5 weeks before graduation.
- should always submit copies of published articles to the NIHES administrative office, Educational Support Center;
- is allowed to present his or her research findings at a congress or other event only after careful consultation with his or her tutor (Please note that participation fees and other related expenses cannot be recovered from NIHES);
- should inform NIHES instantly of any changes in contact details, e.g. home or e-mail addresses;
- should inform NIHES in case of problems affecting study progress.

3 Master of Science in Health Sciences (70 ECTS)

The Master of Science programme in Health Sciences (70 ECTS) is offered in two learning modes: a one-year full-time variant[1], and the executive programme variant (70 ECTS). Chapter 3a gives specific information on the executive Programme.

The one-year full-time programme has the following specialisations:
- Epidemiology;
- Clinical Epidemiology;
- Genetic Epidemiology;
- Public Health;
- Pharmaco-epidemiology.

3.1 Aims of the programme

This MSc programme aims at training students who are well educated in research methodology. Upon graduation you will be able to successfully pursue a scientific career. The programme provides you with a solid theoretical, methodological and statistical basis for designing and implementing a research project and will teach you how to best publish the results of your research project. The programme complies with the requirements at an (inter)national master's level through the choice of lecturers. In the course of the programme you will acquire the following competencies:

- Ability to formulate a relevant problem and translate it into a scientific question;
- Ability to perform an extensive study of the literature concerning a problem;
- Ability to translate a scientific question into a research protocol;
- Acquisition of sufficient knowledge of existing methods of scientific research, biostatistical analytical methods, laws, regulations and ethics, and the abilities to use such knowledge in a research protocol;
- Ability to conduct the research, to collect and analyse data, and to draw conclusions. Ability to write a Master's thesis, including the objective(s) of the investigation, a summary of the literature, materials, methods, results, discussion and conclusions of the research project, and to present these findings at scientific meetings. Publication of the research findings in an international peer-reviewed journal is encouraged.

3.2 Specific course information

All information in section 2.2 is applicable to MSc students in Health Sciences. The MSc in Health Sciences students additionally need to attend and pass the Introduction to Medical Writing course (see below).

3.2.1 Introduction to Medical Writing (SC02)

This course is compulsory for all one-year MSc students, except for NIHES/Erasmus MC PhD candidates and executive programme students. The course focuses on the writing of correct and readable scientific articles in English.

3.3 Specific Research information

All information concerning the research project in section 2.3 is applicable to MSc students in Health Sciences.

[1] The full-time variant can be spread out over more than one year, to be agreed with your programme coordinator

3.4 Programme overview MSc HS (70 ECTS)

Exam programme in Osiris is NIHES-RMHS2014

Calendar	Programme*	Part Exam programme OSIRIS	ECTS specialisation**				
			EP	CE	GE	PH	PE
Aug-Oct	SC01	Common core	1.4	1.4	1.4	1.4	1.4
Sep-Dec	CC01, CC02, EP03	Common core	14.3	14.3	14.3	14.3	14.3
Jan	M-RES: Research proposal	Common core	2.5	2.5	2.5	2.5	2.5
Jan-Aug	M-RES: Research period	Common core	27.3	27.3	27.3	27.3	27.3
Apr	M-RES: Midterm Presentation	Common core	1.4	1.4	1.4	1.4	1.4
May-Jul	M-RES: Oral Presentation Research Project at research department	Common core	1.4	1.4	1.4	1.4	1.4
May	SC02	Common core	2.0	2.0	2.0	2.0	2.0
Aug	Introductory ESP courses	Required	4.2	4.2	4.6	4.2	4.2
Oct-Nov	CE02	Required		5.7			
Nov	EP02	Required	1.4	1.4			
Oct-Nov	GE02, GE08, GE14	Required			7.1		
Oct-Nov	HS02, HS03a	Required				7.1	
Jan-May	GE03, GE05, GE13	Required			4.2		
Sep-Jun	Eu2P-D4M1, Eu2P-D5M1, Eu2P-D4M2, EWP03	Required					13.9
Jan-Jun	PU03, PU04	Required				0.6	
Oct-Nov	CE02 or HS02	Elective	5.7				
Aug or Jan-Jun	3 weeks ESP or other advanced electives	Elective	4.2	4.2	3.8	4.2	
Jan-Jun	Advanced elective courses	Elective	4.2	4.2		3.6	1.6
	Total ECTS		**70.0**	**70.0**	**70.0**	**70.0**	**70.0**

*Specialisation MSc (Spec.): Clinical Epidemiology (CE); Epidemiology (EP); Genetic Epidemiology (GE); Public Health (PH); Pharmaco-epidemiology (PE).

Course abbreviations can be found in Annex IV. Research abbreviations refer to codes in Osiris.

Dates and times of the courses can be found in the time table of your programme and specialisation (see chapter 3).

**1.4 ECTS = 1 week

3.5 Time tables 2016-2017

The following pages include the 2016 - 2017 timetables for the specialisations of the one-year MSc in Health Sciences programme (70 ECTS):

3.5.1 Epidemiology;
3.5.2 Clinical Epidemiology;
3.5.3 Genetic Epidemiology;
3.5.4 Public Health;
3.5.5 Pharmaco-epidemiology.

Please note that all programmes can be subject to change.

In addition, an important part of these programmes is dedicated to your research project. See chapter 2 for further details.

You are advised to regularly check Canvas for up-to-date course information.

3.5.1 MSc in Health Sciences – specialisation Epidemiology

Summer 2016				
Courses / Study programme component		**ECTS**	**Dates**	**Time/Examination**
Principles of Research in Medicine (ESP01)	Required	0.7	8 - 12 Aug 2016	Daily from 08.45 to 11.45 hours
Introduction to Global Public Health (ESP41)	Required	0.7	8 - 12 Aug 2016	Daily from 13.00 to 16.00 hours
Methods of Public Health Research (ESP11)	Required	0.7	15 - 19 Aug 2016	Daily from 08.45 to 11.45 hours
Fundamentals of Medical Decision Making (ESP70)	Required	0.7	15 - 19 Aug 2016	Daily from 13.00 to 16.00 hours
Primary and Secondary Prevention Research (ESP45)	Required	0.7	22 - 26 Aug 2016	Daily from 08.45 to 11.45 hours
Social Epidemiology (ESP61)	Required	0.7	22 - 26 Aug 2016	Daily from 13.00 to 16.00 hours
English Language (SC01) (see 2.2.1.1 Common core)	Common Core	1.4	**Tests: Monday 15 August 17.30 hours.** **Aug - Oct 2016, depending on your group**	Assignment(s) and presentation

Fall 2016				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Study Design (CC01)	Common Core	4.3	29 Aug - 16 Sep 2016 (No lectures on Wednesday. The 3rd week is a study week)	16 Sep 2016; Resit: 11 Jan 2017
Biostatistical Methods I: Basic Principles (CC02)	Common Core	5.7	19 Sep - 14 Oct 2016 (No lectures on Wednesday. The 4th week is a study week)	14 Oct 2016; Resit: 13 Jan 2017
Public Health Research: from Epidemiology to Health Promotion (HS02)[1], consisting of part a, b and c	Elective	5.7	(No lectures on Wednesday. The 4th week is a study week)	
- Analysis of Population Health (HS02a)			17 - 21 Oct 2016	11 Nov 2016; Resit: 20 Jan 2017
- Analysis of Determinants (HS02b)			24 - 28 Oct 2016	11 Nov 2016; Resit: 20 Jan 2017
- Intervention Development and Evaluation (HS02c)			31 Oct - 4 Nov 2016	11 Nov 2016; Resit: 20 Jan 2017
Clinical Epidemiology (CE02)[1]	Elective	5.7	17 Oct - 11 Nov 2016 (No lectures on Wednesday. The 4th week is a study week)	11 Nov 2016; Resit: 20 Jan 2017
Methodologic Topics in Epidemiologic Research (EP02)	Required	1.4	14 - 18 Nov 2016 (No lectures on Wednesday)	18 Nov 2016; Resit: 18 Jan 2017
Biostatistical Methods II: Classical Regression Models (EP03)	Common Core	4.3	21 Nov - 9 Dec 2016 (No lectures on Wednesday. The 3rd week is a study week)	Group assignment (deadline 6 Dec 2016) and oral group exam on 8 or 9 Dec 2016; Resit: Deadline assignment 25 Jan 2017

[1] You may attend either HS02 **or** CE02.

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Research / Study programme component		ECTS	Dates	Examination / Resit
Research Proposal (M-RES)	Common Core	2.5	Deadline 31 January 2017	For details see section 2.3

Winter / Spring 2017				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Advanced elective courses	Elective	4.2 – 5.6	You may select 4.2 – 5.6 ECTS of elective courses. You may also choose to exchange courses in the 2nd elective Erasmus Summer Programme for more electives (4.2 ECTS, see below). See also section 2.2.1.3 for further details.	
Introduction to Medical Writing (SC02)	Common Core	2.0	June 2017	Assignment(s)

Research / Study programme component		ECTS	Dates	Examination / Resit
Midterm Presentation Research Project (M-RES)	Common Core	1.4	Deadline spring 2017 will be announced.	For details see section 2.3.5
Oral Presentation Research Project (M-RES)	Common Core	1.4	Deadline: before July 24, 2017	For details see section 2.3
Research Period (M-RES)	Common Core	27.4	Deadline Research Paper: before July 24, 2017	For details see section 2.3

Summer 2017				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
3 weeks electives Erasmus Summer Programme (alternatively you may choose electives in winter/spring)	Elective	4.2	August 2017	

Graduation Ceremony
In order to officially complete your NIHES degree programme, you are required to attend the NIHES Graduation Ceremony. Graduation takes place in Rotterdam at the end of the 2nd elective Erasmus Summer Programme. See chapter 7 for further details.

3.5.2 MSc in Health Sciences - specialisation Clinical Epidemiology

Summer 2016				
Courses / Study programme component		**ECTS**	**Dates**	**Time/Examination**
Principles of Research in Medicine (ESP01)	Required	0.7	8 - 12 Aug 2016	Daily from 08.45 to 11.45 hours
Clinical Trials (ESP14)	Required	0.7	8 - 12 Aug 2016	Daily from 13.00 to 16.00 hours
Methods of Clinical Research (ESP10)	Required	0.7	15 - 19 Aug 2016	Daily from 08.45 to 11.45 hours
Fundamentals of Medical Decision Making (ESP70)	Required	0.7	15 - 19 Aug 2016	Daily from 13.00 to 16.00 hours
The Practice of Epidemiologic Analysis (ESP65)	Required	0.7	22 - 26 Aug 2016	Daily from 08.45 to 11.45 hours
Health Economics (ESP25)	Required	0.7	22 - 26 Aug 2016	Daily from 13.00 to 16.00 hours
English Language (SC01) (see 2.2.1.1 Common core)	Common Core	1.4	**Tests: Monday 15 August 17.30 hours.** **Aug - Oct 2016, depending on your group**	Assignment(s) and presentation

Fall 2016				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Study Design (CC01)	Common Core	4.3	29 Aug - 16 Sep 2016 (No lectures on Wednesday. The 3rd week is a study week)	16 Sep 2016; Resit: 11 Jan 2017
Biostatistical Methods I: Basic Principles (CC02)	Common Core	5.7	19 Sep - 14 Oct 2016 (No lectures on Wednesday. The 4th week is a study week)	14 Oct 2016; Resit: 13 Jan 2017
Clinical Epidemiology (CE02)	Required	5.7	17 Oct - 11 Nov 2016 (No lectures on Wednesday. The 4th week is a study week)	11 Nov 2016; Resit: 20 Jan 2017
Methodologic Topics in Epidemiologic Research (EP02)	Required	1.4	14 - 18 Nov 2016 (No lectures on Wednesday)	18 Nov 2016; Resit: 18 Jan 2017
Biostatistical Methods II: Classical Regression Models (EP03)	Common Core	4.3	21 Nov - 9 Dec 2016 (No lectures on Wednesday. The 3rd week is a study week)	Group assignment (deadline 6 Dec 2016) and oral group exam on 8 or 9 Dec 2016; Resit: Deadline assignment 25 Jan 2017
CHRISTMAS BREAK 24 December 2016 - 08 January 2017				

Research / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Research Proposal (M-RES)	Common Core	2.5	Deadline 31 January 2017	For details see section 2.3

Winter / Spring 2017				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Advanced elective courses	Elective	4.2 – 5.6	You may select 4.2 – 5.6 ECTS of elective courses. You may also choose to exchange courses in the 2nd elective Erasmus Summer Programme for more electives (4.2 ECTS, see below). See also section 2.2.1.3 for further details.	
Introduction to Medical Writing (SC02)	Common Core	2.0	June 2017	Assignment(s)

Research / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Midterm Presentation Research Project (M-RES)	Common Core	1.4	Deadline spring 2017 will be announced.	For details see section 2.3.5
Oral Presentation Research Project (M-RES)	Common Core	1.4	Deadline: before July 24, 2017	For details see section 2.3
Research Period (M-RES)	Common Core	27.4	Deadline Research Paper before July 24, 2017	For details see section 2.3

Summer 2017				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
3 weeks electives Erasmus Summer Programme (alternatively you may choose electives in winter/spring)	Elective	4.2	August 2017	

Graduation Ceremony
In order to officially complete your NIHES degree programme, you are required to attend the NIHES Graduation Ceremony. Graduation takes place in Rotterdam at the end of the 2nd elective Erasmus Summer Programme. See chapter 7 for further details.

3.5.3 MSc in Health Sciences - specialisation Genetic Epidemiology

Summer 2016				
Courses / Study programme component		**ECTS**	**Dates**	**Time/Examination**
Principles of Research in Medicine (ESP01)	Required	0.7	8 - 12 Aug 2016	Daily from 08.45 to 11.45 hours
Principles of Genetic Epidemiology (ESP43)	Required	0.7	8 - 12 Aug 2016	Daily from 13.00 to 18.00 hours
Genomics in Molecular Medicine (ESP57)	Required	1.4	15 - 19 Aug 2016	Daily from 08.45 to 16.00 hours
Advances in Genomics Research (ESP63)	Required	0.4	15 - 19 Aug 2016	Daily from 16.00 to 17.00 hours
Genome-wide Association Studies (ESP74)	Required	0.7	22 - 26 Aug 2016	Daily from 08.45 to 11.45 hours
Epigenetics (ESP75)	Required	0.7	22 - 26 Aug 2016	Daily from 13.00 to 16.00 hours
English Language (SC01) (see 2.2.1.1 Common core)	Common Core	1.4	**Tests: Monday 15 August 17.30 hours.** **Aug - Oct 2016, depending on your group**	Assignment(s) and presentation

Fall 2016				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Study Design (CC01)	Common Core	4.3	29 Aug - 16 Sep 2016 (No lectures on Wednesday. The 3rd week is a study week)	16 Sep 2016; Resit: 11 Jan 2017
Biostatistical Methods I: Basic Principles (CC02)	Common Core	5.7	19 Sep - 14 Oct 2016 (No lectures on Wednesday. The 4th week is a study week)	14 Oct 2016; Resit: 13 Jan 2017
Linux for Scientists (GE14)	Required	0.6	17 and 18 Oct 2016	Assignment(s)
Genetic-epidemiologic Research Methods (GE02)	Required	5.1	19 Oct – 11 Nov 2016	Presentation: 7 Nov 2016 Written exam: 11 Nov 2016 Resit: 20 Jan 2017
SNPs and Human Diseases (GE08)	Required	1.4	14 – 18 Nov 2016	Attendance
Biostatistical Methods II: Classical Regression Models (EP03)	Common Core	4.3	21 Nov - 9 Dec 2016 (No lectures on Wednesday. The 3rd week is a study week)	Group assignment (deadline 6 Dec 2016) and oral group exam on 8 or 9 Dec 2016; Resit: Deadline assignment 25 Jan 2017
CHRISTMAS BREAK 24 December 2016 - 08 January 2017				

Research / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Research Proposal (M-RES)	Common Core	2.5	Deadline 31 January 2017	For details see section 2.3

Winter / Spring 2017				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Advances in Genome-Wide Association Studies of Complex Genetic Disorders (GE03)	Required	1.4	Winter 2017	To be announced.
Family-based Genetic Analysis (GE05)	Required	1.4	Winter 2017	Assignment(s)
An Introduction to the Analysis of Next-Generation Sequencing Data (GE13)	Required	1.4	Winter 2017	Assignment(s)
Advanced elective courses	Elective	Max 1.4	You may select maximal 1.4 ECTS of elective courses. You may also choose to exchange courses in the 2nd elective Erasmus Summer Programme for more electives (3.8 ECTS, see below). See also section 2.2.1.3 for further details.	
Introduction to Medical Writing (SC02)	Common Core	2.0	June 2017	Assignment(s)

Research / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Midterm Presentation Research Project (M-RES)	Common Core	1.4	Deadline spring 2017 will be announced.	For details see section 2.3.5
Oral Presentation Research Project (M-RES)	Common Core	1.4	Deadline: before July 24, 2017	For details see section 2.3
Research Period (M-RES)	Common Core	27.4	Deadline Research Paper: before July 24, 2017	For details see section 2.3

Summer 2017				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
3 weeks electives Erasmus Summer Programme (alternatively you may choose electives in winter/spring)	Elective	4.2	August 2017	

Graduation Ceremony
In order to officially complete your NIHES degree programme, you are required to attend the NIHES Graduation Ceremony. Graduation takes place in Rotterdam at the end of the 2nd elective Erasmus Summer Programme. See chapter 7 for further details.

3.5.4 MSc in Health Sciences – specialisation Public Health

Summer 2016				
Courses / Study programme component		**ECTS**	**Dates**	**Time/Examination**
Principles of Research in Medicine (ESP01)	Required	0.7	8 - 12 Aug 2016	Daily from 08.45 to 11.45 hours
Introduction to Global Public Health (ESP41)	Required	0.7	8 - 12 Aug 2016	Daily from 13.00 to 16.00 hours
Methods of Public Health Research (ESP11)	Required	0.7	15 - 19 Aug 2016	Daily from 08.45 to 11.45 hours
Methods of Health Services Research (ESP42)	Required	0.7	15 - 19 Aug 2016	Daily from 13.00 to 16.00 hours
Primary and Secondary Prevention Research (ESP45)	Required	0.7	22 - 26 Aug 2016	Daily from 08.45 to 11.45 hours
Social Epidemiology (ESP61)	Required	0.7	22 - 26 Aug 2016	Daily from 13.00 to 16.00 hours
English Language (SC01) (see 2.2.1.1 Common core)	Common Core	1.4	**Tests: Monday 15 August 17.30 hours.** **Aug - Oct 2016, depending on your group**	Assignment(s) and presentation

Fall 2016				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Study Design (CC01)	Common Core	4.3	29 Aug - 16 Sep 2016 (No lectures on Wednesday. The 3rd week is a study week)	16 Sep 2016; Resit: 11 Jan 2017
Biostatistical Methods I: Basic Principles (CC02)	Common Core	5.7	19 Sep - 14 Oct 2016 (No lectures on Wednesday. The 4th week is a study week)	14 Oct 2016; Resit: 13 Jan 2017
Public Health Research: from Epidemiology to Health Promotion (HS02) consisting of part a, b and c	Required	5.7	(No lectures on Wednesday. The 4th week is a study week)	
- Analysis of Population Health (HS02a)			17 - 21 Oct 2016	11 Nov 2016; Resit: 20 Jan 2017
- Analysis of Determinants (HS02b)			24 - 28 Oct 2016	11 Nov 2016; Resit: 20 Jan 2017
- Intervention Development and Evaluation (HS02c)			31 Oct - 4 Nov 2016	11 Nov 2016; Resit: 20 Jan 2017
International Comparison of Health Care Systems (HS03a)	Required	1.4	14 - 18 Nov 2016 (No lectures on Wednesday) **Location NIVEL, Utrecht or Erasmus MC, Rotterdam**	Presentation: 18 November 2016
Biostatistical Methods II: Classical Regression Models (EP03)	Common Core	4.3	21 Nov - 9 Dec 2016 (No lectures on Wednesday. The 3rd week is a study week)	Group assignment (deadline 6 Dec 2016) and oral group exam on 8 or 9 Dec 2016; Resit: Deadline assignment 25 Jan 2017
CHRISTMAS BREAK 24 December 2016 - 08 January 2017				

Research / Study programme component		ECTS	Dates	Examination / Resit
Research Proposal (M-RES)	Common Core	2.5	Deadline 31 January 2017	For details see section 2.3

Winter / Spring 2017				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Advanced elective courses	Elective	3.6 – 5.0	You may select 3.6 – 5.0 ECTS of elective courses, of which at least 2.2 ECTS must be HS or PU courses. You may also choose to exchange courses in the 2nd elective Erasmus Summer Programme for more electives (4.2 ECTS, see below). See also section 2.2.1.3 for further details.	
Site Visit to the Municipal Health Service Rotterdam (PU03)	Required	0.3	June 2017 **Location: Municipal Health Service, Rotterdam**	Presentation
Integration module (PU04)	Required	0.3	June 2017	Presentation
Introduction to Medical Writing (SC02)	Common Core	2.0	June 2017	Assignment(s)

Research / Study programme component		ECTS	Dates	Examination / Resit
Midterm Presentation Research Project (M-RES)	Common Core	1.4	Deadline spring 2017 will be announced.	For details see section 2.3.5
Oral Presentation Research Project (M-RES)	Common Core	1.4	Deadline: before July 24, 2017	For details see section 2.3
Research Period (M-RES)	Common Core	27.4	Deadline Research Paper: before July 24, 2017	For details see section 2.3

Summer 2017				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
3 weeks electives Erasmus Summer Programme (alternatively you may choose electives in winter/spring)	Elective	4.2	August 2017	

Graduation Ceremony
In order to officially complete your NIHES degree programme, you are required to attend the NIHES Graduation Ceremony. Graduation takes place in Rotterdam at the end of the 2nd elective Erasmus Summer Programme. See chapter 7 for further details.

3.5.5 MSc in Health Sciences- specialisation Pharmaco-epidemiology

Summer 2016				
Courses / Study programme component		**ECTS**	**Dates**	**Time/Examination**
Principles of Research in Medicine (ESP01)	Required	0.7	8 - 12 Aug 2016	Daily from 08.45 to 11.45 hours
Pharmaco-epidemiology (ESP21)	Required	0.7	8 - 12 Aug 2016	Daily from 13.00 to 16.00 hours
Methods of Clinical Research (ESP10)	Required	0.7	15 - 19 Aug 2016	Daily from 08.45 to 11.45 hours
Fundamentals of Medical Decision Making (ESP70)	Required	0.7	15 - 19 Aug 2016	Daily from 13.00 to 16.00 hours
The Practice of Epidemiologic Analysis (ESP65)	Required	0.7	22 - 26 Aug 2016	Daily from 08.45 to 11.45 hours
Health Economics (ESP25)	Required	0.7	22 - 26 Aug 2016	Daily from 13.00 to 16.00 hours
English Language (SC01) (see 2.2.1.1 Common core)	Common Core	1.4	**Tests: Monday 15 August 17.30 hours.** **Aug - Oct 2016, depending on your group**	Assignment(s) and presentation

Fall 2016				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Study Design (CC01)	Common Core	4.3	29 Aug - 16 Sep 2016 (No lectures on Wednesday. The 3rd week is a study week)	16 Sep 2016; Resit: 11 Jan 2017
Biostatistical Methods I: Basic Principles (CC02)	Common Core	5.7	19 Sep - 14 Oct 2016 (No lectures on Wednesday. The 4th week is a study week)	14 Oct 2016; Resit: 13 Jan 2017
Eu2P Freshers' Week (Introductory lectures) *highly recommended*			28– 30 Sep (during CC02), **Location Université Bordeaux Segalen, Bordeaux**	Attendance, Introductory workshop on use of Eu2P web-based learning platform. *Align with programme officer OSC about missed days CC02*
Medicines Risk Identification and Quantification Module 1: Principles of identifying and recognizing adverse events and safety signals (Eu2P-D4M1)	Required	3.0	3 Oct – 9 Dec (12 – 23 Dec is assessment period) **Web-based (online)**	12 – 23 Dec is assessment period Resit: To be announced.
Medicines Benefit-Risk Assessment Module 1: Introduction to Benefit-Risk Assessment and Pharmacoeconomics Communication in Decision Making (Eu2P-D5M1)	Required	3.0	3 Oct – 9 Dec (12 – 23 Dec is assessment period) **Web-based (online)**	12 – 23 Dec is assessment period Resit: To be announced.
Biostatistical Methods II: Classical Regression Models (EP03)	Common Core	4.3	21 Nov - 9 Dec 2016 (No lectures on Wednesday. The 3rd week is a study week)	Group assignment (deadline 6 Dec 2016) and oral group exam on 8 or 9 Dec 2016; Resit: Deadline assignment 25 Jan 2017
CHRISTMAS BREAK 24 December 2016 - 08 January 2017				

Research / Study programme component		ECTS	Dates	Examination / Resit
Research Proposal (M-RES)	Common Core	2.5	Deadline 31 January 2017	For details see section 2.3

Winter / Spring 2017				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Pharmacoepidemiology and Drug Safety (EWP03)	Required	1.9	Winter/spring 2017	To be announced.
Advanced elective courses	Elective	1.6 – 3.0	You may choose 1.6 – 3.0 ECTS of elective courses.	
Medicines Risk Identification and Quantification Module 2: Substantiation and Quantification of Risks (Eu2P-D4M2)	Required	6.0	Jan - Jun 2017 **Web-based (online)**	3 – 14 Apr and/or19 – 23 Jun Resit: To be announced.
Medicines Risk Identification and Quantification Module 3: Identifying Susceptibility for Adverse Drug Reactions (Eu2P-D4M3) *highly recommended as an elective*	Elective	3.0	Apr - Jun 2017 **Web-based (online)**	19 – 23 Jun Resit: To be announced.
Introduction to Medical Writing (SC02)	Common Core	2.0	June 2017	Assignment(s)

Research / Study programme component		ECTS	Dates	Examination / Resit
Midterm Presentation Research Project (M-RES)	Common Core	1.4	Deadline spring 2017 will be announced.	For details see section 2.3.5
Oral Presentation Research Project (M-RES)	Common Core	1.4	Deadline: before July 24, 2017	For details see section 2.3
Research Period (M-RES)	Common Core	27.4	Deadline Research Paper: before July 24, 2017	For details see section 2.3

Graduation Ceremony
In order to officially complete your NIHES degree programme, you are required to attend the NIHES Graduation Ceremony. Graduation takes place in Rotterdam at the end of the 2nd elective Erasmus Summer Programme. See chapter 7 for further details.

3a Executive programme, MSc in Health Sciences

The executive programme is a part-time variant of the MSc in Health Sciences of 70 ECTS. There are different options (see section 1.2): a Summer School programme (programmes specified in this section 3a.4 en 3a.5) and a tailor-made programme.
The Summer School programme has the following specialisations:

- Epidemiology;
- Clinical Epidemiology, and;
- Genetic Epidemiology.

The tailor-made programme is available in all five specialisations and is designed in consultation with a programme coordinator to fit your personal schedule.

3a.1 Aims of the programme

The aims are the same as for the one-year full-time MSc programme in Health Sciences (see section 2.2.1.3).

3a.2 Specific course information

All information in sections 2.2 and 3.2 is applicable to Executive programme students.

In the Summer School programme, some courses of the MSc in Health Sciences in fall are replaced by other courses in the Erasmus Summer Programme and Erasmus Winter Programme. For detailed information see sections 3a.4 and 3a.5.Your courses on statistics are scheduled in the Erasmus Summer Programme. These courses have a written examination.

- Introduction to Biostatistics (ESP03);
- Regression Analysis (ESP09);
- Survival Analysis (ESP28).

3a.3 Specific research information

All stipulations in sections 2.3 apply to Executive programme students. Executive programme students are allowed to start their research, even if not yet compulsory courses were taken. You will be able to perform your research project in your own institute or university. You will be assigned to a tutor within Erasmus MC, who will guide you during your research project, together with the supervisor at your home institution or university.

3a.4 Programme overview Summer School Programme (MSc HS, 70 ECTS)

Exam programme in Osiris is NIHES-SSP2014.

Calendar	Programme*	Part Exam programme OSIRIS	ECTS specialisation**		
Year 1			**EP**	**CE**	**GE**
Aug-Oct	SC01	Common core	1.4	1.4	1.4
Sep	CC01	Common core	4.3	4.3	4.3
Jan	SUSC-RES: Research proposal	Common core	2.5	2.5	2.5
Aug	Introductory ESP courses	Required	4.2	4.2	4.6
Oct-Nov	GE02, GE08, GE14	Required			7.1
Feb-Mar	EWP courses	Required	5.7	5.7	1.9
Jan-May	GE03	Required			1.4
Jan- May	GE05 or GE13	Elective			1.4
Jan-Jun	Advanced elective courses	Elective	6.2	6.2	5.1
Year 2					
Aug	ESP03, ESP09, ESP15	Common core	3.6	3.6	3.6
Aug-Jul	SUSC-RES: Research period (for year 1 and 2), for starters before 2016 it is 31.1 ECTS	Common core	29.7	29.7	29.7
Apr	SUSC-RES: Midterm Presentation (for starters in 2016)	Common core	1.4	1.4	1.4
May-Jul	SUSC-RES: Oral Presentation Research Project at research department	Common core	1.4	1.4	1.4
Feb-Mar	Advanced topics in Clinical Research (EWP courses)	Required	5.4	5.4	
Aug/Jan-Jun	3 weeks ESP or other advanced electives	Elective	4.2	4.2	4.2
	Total ECTS		**70.0**	**70.0**	**70.0**

*Specialisation MSc (Spec.); Clinical Epidemiology (CE); Epidemiology (EP); Genetic Epidemiology (GE)

Course abbreviations can be found in Annex IV. Research abbreviations refer to codes in Osiris.
Dates and times of the courses can be found in the time table of your programme and specialisation (see chapter 3a).
**1.4 ECTS = 1 week

3a.5 Time tables 2016-2017

The following pages include the 2016 - 2017 timetables for the specialisations of the one-year MSc in Health Sciences programme (70 ECTS):
3a.5.1 Summer School MSc in Health Sciences programme, specialisation Epidemiology;
3a.5.2 Summer School MSc in Health Sciences programme, specialisation Clinical Epidemiology;
3a.5.3 Summer School MSc in Health Sciences programme, specialisation Genetic Epidemiology.

Please note that all programmes can be subject to change.
In addition, an important part of these programmes is dedicated to your research project. See chapter 3 for further details.
You are advised to regularly check Canvas for up-to-date course information.

3a.5.1 Summer School programme, MSc in Health Sciences, specialisation Epidemiology

Start 2016 – First visit

Summer 2016				
Courses / Study programme component		**ECTS**	**Dates**	**Time/Examination**
Principles of Research in Medicine (ESP01)	Required	0.7	8 - 12 Aug 2016	Daily from 08.45 to 11.45 hours
Introduction to Global Public Health (ESP41)	Required	0.7	8 - 12 Aug 2016	Daily from 13.00 to 16.00 hours
Methods of Public Health Research (ESP11)	Required	0.7	15 - 19 Aug 2016	Daily from 08.45 to 11.45 hours
Fundamentals of Medical Decision Making (ESP70)	Required	0.7	15 - 19 Aug 2016	Daily from 13.00 to 16.00 hours
Primary and Secondary Prevention Research (ESP45)	Required	0.7	22 - 26 Aug 2016	Daily from 08.45 to 11.45 hours
Social Epidemiology (ESP61)	Required	0.7	22 - 26 Aug 2016	Daily from 13.00 to 16.00 hours
English Language (SC01) (see 2.2.1.1 Common core)	Common Core	1.4	**Tests: Monday 15 August 17.30 hours.** **Aug - Oct 2016, depending on your group**	Assignment(s) and presentation

Fall 2016				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Study Design (CC01)	Common Core	4.3	29 Aug - 16 Sep 2016 (No lectures on Wednesday. The 3rd week is a study week)	16 Sep 2016; Resit: 11 Jan 2017

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Winter / Spring 2017				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Diagnostic Research (EWP05)	Required	1.4	To be announced.	Assignment(s)
Advanced Topics in Clinical Trials (EWP10)	Required	1.9	To be announced.	Written exam
Advanced Topics in Decision-making in Medicine (EWP02)	Required	2.4	To be announced.	Assignment(s)
Advanced elective courses	Elective	6.2 – 7.6	For starters in 2016: you may select 6.2 – 7.6 ECTS days of elective courses, this semester and/or in winter/spring session of 2018. See section 2.2.1.3 for further details. For starters before 2016: you may select 7.2 – 8.6 days of elective courses.	

Start 2015 – Second visit in 2016

Summer 2016				
Courses / Study programme component[1]		**ECTS**	**Dates**	**Time/Examination**
Topics in Meta-analysis (ESP15)	Common Core	0.7	8 - 12 Aug 2016	Daily from 08.45 to 11.45 hours
Introduction to Data-analysis (ESP03)	Common Core	1.0	8 - 12 Aug 2016	Daily from 13.00 to 18.00 hours
Regression Analysis (ESP09)	Common Core	1.9	15 - 19 Aug 2016	Daily from 08.45 to 16.00 hours

CHRISTMAS BREAK 24 December 2016 - 08 January 2017

Research / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Research Proposal (DRP)	Common Core	2.5	Deadline 31 January 2017	For details see section 2.3

Winter / Spring 2017				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Pharmaco-epidemiology and drug safety (EWP03)	Required	1.9	To be announced.	To be announced.
Survival Analysis for Clinicians (EWP24)	Required	1.9	To be announced.	To be announced.
Advanced Analysis of Prognosis Studies (EWP13)	Required	0.9	To be announced.	To be announced.
Principles of Epidemiologic Data-analysis (EWP25)	Required	0.7	To be announced.	Exam: last course day. Resit: To be announced.
Advanced elective courses	Elective		For starters before 2016: If you did not attend the full number of elective courses in 2015 (7.2 – 8.6 ECTS), you should take them this semester. See also section 2.2.1.3 for further details.	

[1] There will be examinations for ESP03, ESP09, ESP28 on 2 September 2016

Research / Study programme component		ECTS	Dates	Examination / Resit
Oral Presentation Research Project (PRES)	Common Core	1.4	Deadline: before July 24, 2017	For details see section 2.3
Research Period (SUSC-RP)	Common Core	31.1	Deadline Research Paper: before July 24, 2017	For details see section 2.3

Summer 2017				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
3 weeks electives Erasmus Summer Programme (alternatively you may choose electives in winter/spring)	Elective	4.2	August 2017	

Graduation Ceremony
In order to officially complete your NIHES degree programme, you are required to attend the NIHES Graduation Ceremony. Graduation takes place in Rotterdam at the end of the 3rd elective Erasmus Summer Programme. See chapter 7 for further details.

3a.5.2 Summer School programme, MSc in Health Sciences, specialisation Clinical Epidemiology

Start 2016 – First visit

Summer 2016				
Courses / Study programme component		**ECTS**	**Dates**	**Time/Examination**
Principles of Research in Medicine (ESP01)	Required	0.7	8 - 12 Aug 2016	Daily from 08.45 to 11.45 hours
Clinical Trials (ESP14)	Required	0.7	8 - 12 Aug 2016	Daily from 13.00 to 16.00 hours
Methods of Clinical Research (ESP10)	Required	0.7	15 - 19 Aug 2016	Daily from 08.45 to 11.45 hours
Fundamentals of Medical Decision Making (ESP70)	Required	0.7	15 - 19 Aug 2016	Daily from 13.00 to 16.00 hours
The Practice of Epidemiologic Analysis (ESP65)	Required	0.7	22 - 26 Aug 2016	Daily from 08.45 to 11.45 hours
Health Economics (ESP25)	Required	0.7	22 - 26 Aug 2016	Daily from 13.00 to 16.00 hours
English Language (SC01) (see 2.2.1.1 Common core)	Common Core	1.4	**Tests: Monday 15 August 17.30 hours.** **Aug - Oct 2016, depending on your group**	Assignment(s) and presentation

Fall 2016				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Study Design (CC01)	Common Core	4.3	29 Aug - 16 Sep 2016 (No lectures on Wednesday. The 3rd week is a study week)	16 Sep 2016; Resit: 11 Jan 2017

CHRISTMAS BREAK
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Winter / Spring 2017				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Diagnostic Research (EWP05)	Required	1.4	To be announced.	Assignment(s)
Advanced Topics in Clinical Trials (EWP10)	Required	1.9	To be announced.	Written exam
Advanced Topics in Decision-making in Medicine (EWP02)	Required	2.4	To be announced.	Assignment(s)
Advanced elective courses	Elective	6.2 – 7.6	For starters in 2016: you may select 6.2 – 7.6 ECTS days of elective courses, this semester and/or in winter/spring session of 2018. See section 2.2.1.3 for further details. For starters before 2016: you may select 7.2 – 8.6 days of elective courses.	

Start 2015 – Second visit in 2016

Summer 2016				
Courses / Study programme component[1]		**ECTS**	**Dates**	**Time/Examination**
Topics in Meta-analysis (ESP15)	Common Core	0.7	8 - 12 Aug 2016	Daily from 08.45 to 11.45 hours
Introduction to Data-analysis (ESP03)	Common Core	1.0	8 - 12 Aug 2016	Daily from 13.00 to 18.00 hours
Regression Analysis (ESP09)	Common Core	1.9	15 - 19 Aug 2016	Daily from 08.45 to 16.00 hours

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Research / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Research Proposal (DRP)	Common Core	2.5	Deadline 31 January 2017	For details see section 2.3

Winter / Spring 2017				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Pharmaco-epidemiology and drug safety (EWP03)	Required	1.9	To be announced.	To be announced.
Survival Analysis for Clinicians (EWP24)	Required	1.9	To be announced.	To be announced.
Advanced Analysis of Prognosis Studies (EWP13)	Required	0.9	To be announced.	To be announced.
Principles of Epidemiologic Data-analysis (EWP25)	Required	0.7	To be announced.	Exam: last course day. Resit: To be announced.
Advanced elective courses	Elective		For starters before 2016: If you did not attend the full number of elective courses in 2015 (7.2 – 8.6 ECTS), you should take them this semester. See also section 2.2.1.3 for further details.	

Research / Study programme component	**ECTS**	**Dates**	**Examination / Resit**

[1] There will be examinations for ESP03, ESP09, ESP28 on 2 September 2016

Presentation Research Project (PRES)	Common Core	1.4	Deadline: before July 24, 2017	For details see section 2.3
Research Period (SUSC-RP)	Common Core	31.1	Deadline Research Paper: before July 24, 2017	For details see section 2.3

Summer 2017				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
3 weeks electives Erasmus Summer Programme (alternatively you may choose electives in winter/spring)	Elective	4.2	August 2017	

Graduation Ceremony
In order to officially complete your NIHES degree programme, you are required to attend the NIHES Graduation Ceremony. Graduation takes place in Rotterdam at the end of the 3rd elective Erasmus Summer Programme. See chapter 7 for further details.

3a.5.3 Summer School programme, MSc in Health Sciences, specialisation Genetic Epidemiology

Start 2016 – First visit

Summer 2016				
Courses / Study programme component		**ECTS**	**Dates**	**Time/Examination**
Principles of Research in Medicine (ESP01)	Required	0.7	8 - 12 Aug 2016	Daily from 08.45 to 11.45 hours
Principles of Genetic Epidemiology (ESP43)	Required	0.7	8 - 12 Aug 2016	Daily from 13.00 to 18.00 hours
Genomics in Molecular Medicine (ESP57)	Required	1.4	15 - 19 Aug 2016	Daily from 08.45 to 16.00 hours
Advances in Genomics Research (ESP63)	Required	0.4	15 - 19 Aug 2016	Daily from 16.00 to 17.00 hours
Genome-wide Association Studies (ESP74)	Required	0.7	22 - 26 Aug 2016	Daily from 08.45 to 11.45 hours
Epigenetics (ESP75)	Required	0.7	22 - 26 Aug 2016	Daily from 13.00 to 16.00 hours
English Language (SC01) (see 2.2.1.1 Common core)	Common Core	1.4	**Tests: Monday 15 August 17.30 hours.** **Aug - Oct 2016, depending on your group**	Assignment(s) and presentation

Fall 2016				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Study Design (CC01)	Common Core	4.3	29 Aug - 16 Sep 2016 (No lectures on Wednesday. The 3rd week is a study week)	16 Sep 2016; Resit: 11 Jan 2017

CHRISTMAS BREAK 17 December 2016 - 01 January 2017

Winter / Spring 2017				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Advances in Population-based Studies of Complex Genetic Disorders (GE03)	Required	1.4	Winter 2017	To be announced.
Genetic Linkage Analysis: Model Free Analysis (GE05) or A first encounter with next-generation sequencing data	Required	1.4	Winter 2017	Assignment(s)
Survival Analysis (EWP24)	Required	1.9	To be announced.	Written exam
Advanced elective courses	Elective	5.1 – 6.5	You may select 5.1 – 6.5 ECTS of elective courses, this semester and/or in winter/spring session of 2018. See section 2.2.1.3 for further details. We recommend GE05 and GE13.	

Start 2015 – Second visit in 2016

Summer 2016				
Courses / Study programme component[1]		**ECTS**	**Dates**	**Time/Examination**
Topics in Meta-analysis (ESP15)	Common Core	0.7	8 - 12 Aug 2016	Daily from 08.45 to 11.45 hours
Introduction to Data-analysis (ESP03)	Common Core	1.0	8 - 12 Aug 2016	Daily from 13.00 to 18.00 hours
Regression Analysis (ESP09)	Common Core	1.9	15 - 19 Aug 2016	Daily from 08.45 to 16.00 hours

Fall 2016				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Linux for Scientists (GE14)	Required	0.6	17 and 18 Oct 2016	Assignment(s)
Genetic-epidemiologic Research Methods (GE02)	Required	5.1	19 Oct – 11 Nov 2016	Presentation: 7 Nov 2016 Written exam: 11 Nov 2016 Resit: 20 Jan 2017.
SNPs and Human Diseases (GE08)	Required	1.4	14 – 18 Nov 2016	Attendance

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Research / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Research Proposal (SUSC-RES)	Common Core	2.5	Deadline 31 January 2017	For details see section 2.3

[1] There will be examinations for ESP03, ESP09, ESP28 on 2 September 2016

Winter / Spring 2017				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Advanced elective courses	Elective		If you did not attend the full number of elective courses in 2015-2016, you should take them this semester. See section 2.2.1.3 for further details.	

Research / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Presentation Research Project (PRES)	Common Core	1.4	Deadline: before July 24, 2017	For details see section 2.3
Research Period (SUSC-RP)	Common Core	31.1	Deadline Research Paper: before July 24, 2017	For details see section 2.3

Summer 2017				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
3 weeks electives Erasmus Summer Programme (alternatively you may choose electives in winter/spring)	Elective	4.2	August 2017	

Graduation Ceremony
In order to officially complete your NIHES degree programme, you are required to attend the NIHES Graduation Ceremony. Graduation takes place in Rotterdam at the end of the 3rd elective Erasmus Summer Programme. See chapter 7 for further details.

4. Research Master in Health Sciences (120 ECTS)

The RM in Health Sciences (120 ECTS) is offered in two learning modes: a two-year full time variant, and a variant for excellent medical students. Chapter 4a gives specific information on the variant for excellent medical students.
The two-year year full time programme has the following specialisations:

- Epidemiology;
- Clinical Epidemiology;
- Genetic Epidemiology;
- Public Health;
- HealthEconomic Analysis

4.1 Aims of the programme

The RM programme in Health Sciences aims to provide students with a thorough understanding of methods in clinical research and sufficient knowledge of clinical specialist areas, for example medical technology, immunology or molecular biology. On the basis of this knowledge, the student will be prepared to write a research protocol and to perform research. Students should acquire the following competencies:

- Ability to formulate a clinical problem and translate it into a scientific question;
- Ability to perform an extensive study of the literature concerning a problem;
- Ability to translate a scientific question into a research protocol;
- Acquisition of sufficient knowledge of existing methods of clinical scientific research, biostatistical analytical methods, laws, regulations and ethics and the abilities to use such knowledge in a research protocol;
- Ability to conduct the research, collect and analyse data, and draw conclusions;
- Ability to write a Master's thesis, including the objective(s) of the investigation, a summary of the literature, materials, methods, results, discussion and conclusions of the research project and to present these findings at scientific meetings. Publication of the research findings in an international peer-reviewed journal is encouraged.

This skills set will enable students to become researchers with the ability to complete a PhD programme.

4.2 Specific course information

All information in section 2.2 is applicable to RM in Health Sciences students. Additionally they are required to attend and pass the Scientific Writing in English for Publication course (see below).

4.2.1 Scientific Writing in English for Publication (SC07)

This course is compulsory for all RM students. It consists of four days and focuses on the writing of correct and readable scientific articles in English.

4.3 Specific research information

All information in section 2.3 is applicable to RM in Health Sciences students.

4.4 Programme overview RM HS (120 ECTS)

Exam programme in Osiris is NIHES-RMHS2014

Calendar	Programme*	Part Exam programme OSIRIS	ECTS specialisation**				
Year 1			**EP**	**CE**	**GE**	**PH**	**HE**
Aug-Oct	SC01	Common core	1.4	1.4	1.4	1.4	1.4
Sep-Dec	CC01, CC02, EP03	Common core	14.3	14.3	14.3	14.3	14.3
Jan	RM-RES1:Research proposal	Common core	2.5	2.5	2.5	2.5	2.5
Aug	Introductory ESP courses	Required	4.2	4.2	4.6	4.2	3.5
Oct-Nov	CE02	Required		5.7			
Nov	EP02	Required	1.4	1.4			
Oct-Nov	GE02, GE08, GE14	Required			7.1		
Oct-Nov	HS02, HS03a	Required				7.1	
Tba	GW4568M, GW4546M	Required					10.0
Jan-May	GE03, GE05	Required			2.8		
Jun	PU03	Required				0.3	
Jan-Aug	RM-RES2:Research period	Required	25.9	25.9	25.5	25.9	19.2
Oct-Nov	CE02 or HS02	Elective	5.7				
Jan-Jun	Advanced elective courses	Elective	4.2	4.2	1.4	4.2	10.0
	Total ECTS First year RM		**59.6**	**59.6**	**59.6**	**59.9**	**60.9**
Year 2							
Aug yr1-Aug yr 2	SEM: 24 Research Seminars	Common core	0.8	0.8	0.8	0.8	0.8
Feb-Apr	SC07	Common core	2.0	2.0	2.0	2.0	2.0
May-Jul	RM-RES1: Oral presentation Research Project at Research Department	Common core	1.4	1.4	1.4	1.4	1.4
Aug	ESP48	Required					0.7
Feb-Mar	Advanced topics in Clinical Research (EWP)	Required	5.4	5.4			
Jan-Jun	PU04, PU06	Required				3.3	
Tba	GW4567M	Required					5.0
Tba	GE13	Required			1.4		
Aug-Jul	RM-RES2: continuation Research Period	Required	42.4	42.4	42.8	42.4	49.1
Apr	RM-RES2:Midterm Presentation research project	Required	1.4	1.4	1.4	1.4	1.4
Aug or Jan-Jun	3 weeks ESP or other advanced electives	Elective	4.2	4.2	4.2	4.2	
Jan-Jun	Advanced elective courses	Elective	2.8	2.8	6.4	4.6	
	Total ECTS Second year RM		**60.4**	**60.4**	**60.4**	**60.1**	**60.4**
	Total ECTS		**120**	**120**	**120**	**120**	**121.3**

*Specialisation RM (Spec.); Epidemiology (EP); Clinical Epidemiology (CE); Public Health (PH), Genetic Epidemiology (GE); Health Economic Analysis (HE);

Course abbreviations can be found in Annex IV. Abbreviations research refer to codes in Osiris.

Dates and times of the courses can be found in the time table of your programme and specialisation (see chapter 4).

**1.4 ECTS = 1 week

4.5 Time tables 2016-2017

The following pages include the 2016 - 2017 timetables for the two-year RM in Health Sciences programme (120 ECTS) in the following specialisations:

4.5.1 Epidemiology;
4.5.2 Clinical Epidemiology;
4.5.3 Genetic Epidemiology;
4.5.4 Public Health;
4.5.5 Health Economic Analysis

Please note that all programmes can be subject to change.

In addition, an important part of these programmes is dedicated to your research project. See chapter 2 for further details.

You are advised to regularly check Canvas for up-to-date course information.

4.5.1 RM in Health Sciences – specialisation Epidemiology

Start 2016 - First year

Summer 2016				
Courses / Study programme component		**ECTS**	**Dates**	**Time/Examination**
Principles of Research in Medicine (ESP01)	Required	0.7	8 - 12 Aug 2016	Daily from 08.45 to 11.45 hours
Introduction to Global Public Health (ESP41)	Required	0.7	8 - 12 Aug 2016	Daily from 13.00 to 16.00 hours
Methods of Public Health Research (ESP11)	Required	0.7	15 - 19 Aug 2016	Daily from 08.45 to 11.45 hours
Fundamentals of Medical Decision Making (ESP70)	Required	0.7	15 - 19 Aug 2016	Daily from 13.00 to 16.00 hours
Primary and Secondary Prevention Research (ESP45)	Required	0.7	22 - 26 Aug 2016	Daily from 08.45 to 11.45 hours
Social Epidemiology (ESP61)	Required	0.7	22 - 26 Aug 2016	Daily from 13.00 to 16.00 hours
English Language (SC01) (see 2.2.1.1 Common core)	Common Core	1.4	**Tests: Monday 15 August 17.30 hours.** **Aug - Oct 2016, depending on your group**	Assignment(s) and presentation

Fall 2016				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Study Design (CC01)	Common Core	4.3	29 Aug - 16 Sep 2016 (No lectures on Wednesday. The 3rd week is a study week)	16 Sep 2016; Resit: 11 Jan 2017
Biostatistical Methods I: Basic Principles (CC02)	Common Core	5.7	19 Sep - 14 Oct 2016 (No lectures on Wednesday. The 4th week is a study week)	14 Oct 2016; Resit: 13 Jan 2017
Public Health Research: from Epidemiology to Health Promotion (HS02)[1], consisting of part a, b and c	Elective	5.7	(No lectures on Wednesday. The 4th week is a study week)	
- Analysis of Population Health (HS02a)			17 - 21 Oct 2016	11 Nov 2016; Resit: 20 Jan 2017
- Analysis of Determinants (HS02b)			24 - 28 Oct 2016	11 Nov 2016; Resit: 20 Jan 2017
- Intervention Development and Evaluation (HS02c)			31 Oct - 4 Nov 2016	11 Nov 2016; Resit: 20 Jan 2017
Clinical Epidemiology (CE02)[1]	Elective	5.7	17 Oct - 11 Nov 2016 (No lectures on Wednesday. The 4th week is a study week)	11 Nov 2016; Resit: 20 Jan 2017
Methodologic Topics in Epidemiologic Research (EP02)	Required	1.4	14 - 18 Nov 2016 (No lectures on Wednesday)	18 Nov 2016; Resit: 18 Jan 2017
Biostatistical Methods II: Classical Regression Models (EP03)	Common Core	4.3	21 Nov - 9 Dec 2016 (No lectures on Wednesday. The 3rd week is a study week)	Group assignment (deadline 6 Dec 2016) and oral group exam on 8 or 9 Dec 2016; Resit: Deadline assignment 25 Jan 2017

[1] You may attend either HS02 **or** CE02.

CHRISTMAS BREAK 24 December 2016 - 08 January 2017

Research / Study programme component		ECTS	Dates	Examination / Resit
Research Proposal (RM-RES1)	Common Core	2.5	Deadline 31 January 2017	For details see section 2.3
Research period (RM-RES2)	Required	25.9		

Winter / Spring 2017				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Advanced elective courses	Elective	4.2 – 5.6	You may select 4.2 – 5.6 ECTS of elective courses. You may also choose to exchange courses in the 2nd elective Erasmus Summer Programme for more electives (4.2 ECTS, see below). See also section 2.2.1.3 for further details.	

Seminars – common core
You are required to attend 24 research seminars as a part of your programme, obtaining 0.8 ECTS. For more information, see 2.3.8

Start 2015 – Second year in 2016

Summer 2016				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
3 weeks electives Erasmus Summer Programme (alternatively you may choose electives in winter/spring)	Elective	4.2	8 Aug - 26 Aug 2016	Depending on the course you choose.

CHRISTMAS BREAK 24 December 2016 - 08 January 2017

Winter / Spring 2017				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Scientific Writing in English for Publication (SC07)	Common core	2	Winter 2017	Assignment(s)
Pharmaco-epidemiology and drug safety (EWP03)	Required	1.9	To be announced.	To be announced
Advanced Topics in Clinical Trials (EWP10)	Required	1.9	To be announced.	To be announced
Advanced Analysis of Prognosis Studies (EWP13)	Required	0.9	To be announced.	To be announced
Principles of Epidemiologic Data-analysis (EWP25)	Required	0.7	To be announced.	Exam: last course day; Resit: To be announced
Advanced elective courses	Elective	2.8 – 4.2	You may select 2.8 – 4.2 ECTS of elective courses. If you did not attend the full number of elective ESP courses (4.2 ECTS), you should take them this semester. See section 2.2.1.3	

Research / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Oral Presentation Research Project (PRES)	Common core	1.4	Deadline: before July 3, 2017	For details see section 2.3
Continuation Research period (RP-2013)	Required	45.2	Deadline Research Paper: before July 3, 2017	For details see section 2.3

Seminars – common core
You are required to attend 24 research seminars as a part of your programme, obtaining 0.8 ECTS. For more information, see 2.3.8

Graduation Ceremony
In order to officially complete your NIHES degree programme, you are required to attend the NIHES Graduation Ceremony. Graduation takes place in Rotterdam at the end of the Erasmus Summer Programme. See chapter 7 for further details.

4.5.2 RM in Health Sciences – specialisation Clinical Epidemiology

Start 2016 - First year

Summer 2016				
Courses / Study programme component		**ECTS**	**Dates**	**Time/Examination**
Principles of Research in Medicine (ESP01)	Required	0.7	8 - 12 Aug 2016	Daily from 08.45 to 11.45 hours
Clinical Trials (ESP14)	Required	0.7	8 - 12 Aug 2016	Daily from 13.00 to 16.00 hours
Methods of Clinical Research (ESP10)	Required	0.7	15 - 19 Aug 2016	Daily from 08.45 to 11.45 hours
Fundamentals of Medical Decision Making (ESP70)	Required	0.7	15 - 19 Aug 2016	Daily from 13.00 to 16.00 hours
The Practice of Epidemiologic Analysis (ESP65)	Required	0.7	22 - 26 Aug 2016	Daily from 08.45 to 11.45 hours
Health Economics (ESP25)	Required	0.7	22 - 26 Aug 2016	Daily from 13.00 to 16.00 hours
English Language (SC01) (see 2.2.1.1 Common core)	Common Core	1.4	**Tests: Monday 15 August 17.30 hours.** **Aug - Oct 2016, depending on your group**	Assignment(s) and presentation

Fall 2016				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Study Design (CC01)	Common Core	4.3	29 Aug - 16 Sep 2016 (No lectures on Wednesday. The 3rd week is a study week)	16 Sep 2016; Resit: 11 Jan 2017
Biostatistical Methods I: Basic Principles (CC02)	Common Core	5.7	19 Sep - 14 Oct 2016 (No lectures on Wednesday. The 4th week is a study week)	14 Oct 2016; Resit: 13 Jan 2017
Clinical Epidemiology (CE02)	Required	5.7	17 Oct - 11 Nov 2016 (No lectures on Wednesday. The 4th week is a study week)	11 Nov 2016; Resit: 20 Jan 2017
Methodologic Topics in Epidemiologic Research (EP02)	Required	1.4	14 - 18 Nov 2016 (No lectures on Wednesday)	18 Nov 2016; Resit: 18 Jan 2017
Biostatistical Methods II: Classical Regression Models (EP03)	Common Core	4.3	21 Nov - 9 Dec 2016 (No lectures on Wednesday. The 3rd week is a study week)	Group assignment (deadline 6 Dec 2016) and oral group exam on 8 or 9 Dec 2016; Resit: Deadline assignment 25 Jan 2017

CHRISTMAS BREAK 24 December 2016 - 08 January 2017

Research / Study programme component		ECTS	Dates	Examination / Resit
Research Proposal (RM-RES1)	Common Core	2.5	Deadline 31 January 2017	For details see section 2.3
Research period (RM-RES2)	Required	25.9		

Winter / Spring 2017				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Advanced elective courses	Elective	4.2 – 5.6	You may select 4.2 – 5.6 ECTS of elective courses. You may also choose to exchange courses in the 2nd elective Erasmus Summer Programme for more electives (4.2 ECTS, see below). See also section 2.2.1.3 for further details.	

Seminars – common core
You are required to attend 24 research seminars as a part of your programme, obtaining 0.8 ECTS. For more information, see 2.3.8

Start 2015 – Second year 2016

Summer 2016				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
3 weeks electives Erasmus Summer Programme (alternatively you may choose electives in winter/spring)	Elective	4.2	8 Aug - 26 Aug 2016	Depending on the course you choose.

CHRISTMAS BREAK
24 December 2016 - 08 January 2017

Winter / Spring 2017				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Scientific Writing in English for Publication (SC07)	Common core	2	Winter 2017	Assignment(s)
Pharmaco-epidemiology and drug safety (EWP03)	Required	1.9	To be announced.	To be announced
Advanced Topics in Clinical Trials (EWP10)	Required	1.9	To be announced.	To be announced
Advanced Analysis of Prognosis Studies (EWP13)	Required	0.9	To be announced.	To be announced
Principles of Epidemiologic Data-analysis (EWP25)	Required	0.7	To be announced.	Exam: last course day; Resit: To be announced
Advanced elective courses	Elective	2.8 – 4.2	You may select 2.8 – 4.2 ECTS of elective courses. If you did not attend the full number of elective ESP courses (4.2 ECTS), you should take them this semester. See section 2.2.1.3	

Research / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Oral Presentation Research Project (PRES)	Common Core	1.4	Deadline: before July 3, 2017	For details see section 2.3
Continuation Research Period (RP-2013)	Required	43.8	Deadline Research Paper: before July 3, 2017	For details see section 2.3

Seminars – common core
You are required to attend 24 research seminars as a part of your programme, obtaining 0.8 ECTS a year. For more information, see 2.3.8

Graduation Ceremony
In order to officially complete your NIHES degree programme, you are required to attend the NIHES Graduation Ceremony. Graduation takes place in Rotterdam in at the end of the Erasmus Summer Programme. See chapter 7 for further details.

4.5.3 RM in Health Sciences – specialisation Genetic Epidemiology

Start 2016 – First year

Summer 2016				
Courses / Study programme component		**ECTS**	**Dates**	**Time/Examination**
Principles of Research in Medicine (ESP01)	Required	0.7	8 - 12 Aug 2016	Daily from 08.45 to 11.45 hours
Principles of Genetic Epidemiology (ESP43)	Required	0.7	8 - 12 Aug 2016	Daily from 13.00 to 18.00 hours
Genomics in Molecular Medicine (ESP57)	Required	1.4	15 - 19 Aug 2016	Daily from 08.45 to 16.00 hours
Advances in Genomics Research (ESP63)	Required	0.4	15 - 19 Aug 2016	Daily from 16.00 to 17.00 hours
Genome-wide Association Studies (ESP74)	Required	0.7	22 - 26 Aug 2016	Daily from 08.45 to 11.45 hours
Epigenetics (ESP75)	Required	0.7	22 - 26 Aug 2016	Daily from 13.00 to 16.00 hours
English Language (SC01) (see 2.2.1.1 Common core)	Common Core	1.4	**Tests: Monday 15 August 17.30 hours.** **Aug - Oct 2016, depending on your group**	Assignment(s) and presentation

Fall 2016				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Study Design (CC01)	Common Core	4.3	29 Aug - 16 Sep 2016 (No lectures on Wednesday. The 3rd week is a study week)	16 Sep 2016; Resit: 11 Jan 2017
Biostatistical Methods I: Basic Principles (CC02)	Common Core	5.7	19 Sep - 14 Oct 2016 (No lectures on Wednesday. The 4th week is a study week)	14 Oct 2016; Resit: 13 Jan 2017
Linux for Scientists (GE14)	Required	0.6	17 and 18 Oct 2016	Assignment(s)
Genetic-epidemiologic Research Methods (GE02)	Required	5.1	19 Oct – 11 Nov 2016	Presentation: 7 Nov 2016 Written exam: 11 Nov 2016 Resit: 20 Jan 2017
SNPs and Human Diseases (GE08)	Required	1.4	14 – 18 Nov 2016	Attendance
Biostatistical Methods II: Classical Regression Models (EP03)	Common Core	4.3	21 Nov - 9 Dec 2016 (No lectures on Wednesday. The 3rd week is a study week)	Group assignment (deadline 6 Dec 2016) and oral group exam on 8 or 9 Dec 2016; Resit: Deadline assignment 25 Jan 2017

CHRISTMAS BREAK
24 December 2016 - 08 January 2017

Research / Study programme component		ECTS	Dates	Examination / Resit
Research Proposal (RM-RES1)	Common Core	2.5	Deadline 31 January 2017	For details see section 2.3
Research period (RM-RES2)	Required	25.5		

Winter / Spring 2017				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Advances in Genome-Wide Association Studies of Complex Genetic Disorders (GE03)	Required	1.4	Winter 2017	To be announced.
Family-based Genetic Analysis (GE05)	Required	1.4	Winter 2017	Assignment(s)
Advanced elective courses	Elective	1.4 – 2.8	You may select 1.4 – 2.8 ECTS of elective courses. You may also choose to exchange courses in the 2nd elective Erasmus Summer Programme for more electives (4.2 ECTS, see below). See also section 2.2.1.3 for further details.	

Seminars – common core
You are required to attend 24 research seminars as a part of your programme, obtaining 0.8 ECTS a year. For more information, see 2.3.8

Start 2015 – Second year in 2016

Summer 2016				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
3 weeks electives Erasmus Summer Programme (alternatively you may choose electives in winter/spring)	Elective	4.2	8 Aug - 26 Aug 2016	Depending on the course you choose

CHRISTMAS BREAK 24 December 2016 - 08 January 2017

Winter / Spring 2017				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Scientific Writing in English for Publication (SC07)	Common core	2	Winter 2017	Assignment(s)
An Introduction to the Analysis of Next-Generation Sequencing Data (GE13)	Required	1.4	To be announced.	To be announced.
Advanced elective courses	Elective	6.4 – 7.8	You may select 6.4 – 7.8 ECTS of elective courses. If you did not attend the full number of elective ESP courses (4.2 ECTS), you should take them this semester. See section 2.2.1.3 for further details.	

Research / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Oral Presentation Research Project (PRES)	Common Core	1.4	Deadline: before July 3, 2017	For details see section 2.3
Continuation Research Period (RP-2013)	Required	44.2	Deadline Research Paper: before July 3, 2017	For details see section 2.3

Seminars – common core
You are required to attend 24 research seminars as a part of your programme, obtaining 0.8 ECTS a year. For more information, see 2.3.8

Graduation Ceremony
In order to officially complete your NIHES degree programme, you are required to attend the NIHES Graduation Ceremony. Graduation takes place in Rotterdam at the end of the Erasmus Summer Programme. See chapter 7 for further details.

4.5.4 RM in Health Sciences – specialisation Public Health

Start 2016 - First year

Summer 2016				
Courses / Study programme component		**ECTS**	**Dates**	**Time/Examination**
Principles of Research in Medicine (ESP01)	Required	0.7	8 - 12 Aug 2016	Daily from 08.45 to 11.45 hours
Introduction to Global Public Health (ESP41)	Required	0.7	8 - 12 Aug 2016	Daily from 13.00 to 16.00 hours
Methods of Public Health Research (ESP11)	Required	0.7	15 - 19 Aug 2016	Daily from 08.45 to 11.45 hours
Methods of Health Services Research (ESP42)	Required	0.7	15 - 19 Aug 2016	Daily from 13.00 to 16.00 hours
Primary and Secondary Prevention Research (ESP45)	Required	0.7	22 - 26 Aug 2016	Daily from 08.45 to 11.45 hours
Social Epidemiology (ESP61)	Required	0.7	22 - 26 Aug 2016	Daily from 13.00 to 16.00 hours
English Language (SC01) (see 2.2.1.1 Common core)	Common Core	1.4	**Tests: Monday 15 August 17.30 hours.** **Aug - Oct 2016, depending on your group**	Assignment(s) and presentation

Fall 2016				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Study Design (CC01)	Common Core	4.3	29 Aug - 16 Sep 2016 (No lectures on Wednesday. The 3rd week is a study week)	16 Sep 2016; Resit: 11 Jan 2017
Biostatistical Methods I: Basic Principles (CC02)	Common Core	5.7	19 Sep - 14 Oct 2016 (No lectures on Wednesday. The 4th week is a study week)	14 Oct 2016; Resit: 13 Jan 2017
Public Health Research: from Epidemiology to Health Promotion (HS02) consisting of part a, b and c	Required	5.7	(No lectures on Wednesday. The 4th week is a study week)	
- Analysis of Population Health (HS02a)			17 - 21 Oct 2016	11 Nov 2016; Resit: 20 Jan 2017
- Analysis of Determinants (HS02b)			24 - 28 Oct 2016	11 Nov 2016; Resit: 20 Jan 2017
- Intervention Development and Evaluation (HS02c)			31 Oct - 4 Nov 2016	11 Nov 2016; Resit: 20 Jan 2017
International Comparison of Health Care Systems (HS03a)	Required	1.4	14 - 18 Nov 2016 (No lectures on Wednesday) **Location NIVEL, Utrecht or Erasmus MC, Rotterdam**	Presentation: 18 November 2016
Biostatistical Methods II: Classical Regression Models (EP03)	Common Core	4.3	21 Nov - 9 Dec 2016 (No lectures on Wednesday. The 3rd week is a study week)	Group assignment (deadline 6 Dec 2016) and oral group exam on 8 or 9 Dec 2016; Resit: Deadline assignment 25 Jan 2017

CHRISTMAS BREAK
24 December 2016 - 08 January 2017

Research / Study programme component		ECTS	Dates	Examination / Resit
Research Proposal (RM-RES1)	Common Core	2.5	Deadline 31 January 2017	For details see section 2.3
Research Period (RM-RES2)	Required	25.9		

Winter / Spring 2017				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Site Visit to the Municipal Health Service Rotterdam (PU03)	Required	0.3	To be announced. **Location Municipal Health Service, Rotterdam**	Presentation and attendance.
Advanced elective courses	Elective	4.2 – 5.6	You may select 4.2 – 5.6 ECTS of elective courses, of which at least 2.8 ECTS must be HS or PU courses. You may also choose to exchange courses in the 2nd elective Erasmus Summer Programme for more electives (4.2 ECTS, see below). See also section 2.2.1.3 for further details	

Seminars – common core
You are required to attend 24 research seminars as a part of your programme, obtaining 0.8 ECTS a year. For more information, see 2.3.8

Start 2015 – Second year

Summer 2016				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
3 weeks electives Erasmus Summer Programme (alternatively you may choose electives in winter/spring)	Elective	4.2	8 Aug - 26 Aug 2016	Depending on the course you choose.

CHRISTMAS BREAK 24 December 2016 - 08 January 2017

Winter / Spring 2017				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Scientific Writing in English for Publication (SC07)	Common core	2	Winter 2017	Assignment(s)
Public Health in Low and Middle Income Countries (PU06)	Required	3	To be announced.	To be announced.
Integration Module (PU04)	Required	0.3	To be announced.	Presentation.
Advanced elective courses	Elective	4.6 – 6.0	You may select 4.6 – 6.0 ECTS of elective courses. If you did not attend the full number of elective ESP courses (4.2 ECTS), you should take them this semester. See section 2.2.1.3	

Research / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Oral Presentation Research Project (PRES)	Common Core	1.4	Deadline: before July 3, 2017	For details see section 2.3
Continuation Research Period (RP-2013)	Required	43.8	Deadline Research Paper: before July 3, 2017	For details see section 2.3

Seminars – common core
You are required to attend 24 research seminars as a part of your programme, obtaining 0.8 ECTS a year. For more information, see 2.3.8

Graduation Ceremony
In order to officially complete your NIHES degree programme, you are required to attend the NIHES Graduation Ceremony. Graduation takes place in Rotterdam at the end of the Erasmus Summer Programme. See chapter 7 for further details.

4.5.5 RM in Health Sciences – specialisation Health Economic Analysis

Start 2016 – First year

Summer 2016				
Courses / Study programme component		**ECTS**	**Dates**	**Time/Examination**
Principles of Research in Medicine (ESP01)	Required	0.7	8 - 12 Aug 2016	Daily from 08.45 to 11.45 hours
Introduction to Global Public Health (ESP41)	Required	0.7	8 - 12 Aug 2016	Daily from 13.00 to 16.00 hours
Methods of Public Health Research (ESP11)	Required	0.7	15 - 19 Aug 2016	Daily from 08.45 to 11.45 hours
Methods of Health Services Research (ESP42)	Required	0.7	15 - 19 Aug 2016	Daily from 13.00 to 16.00 hours
Health Economics (ESP25)	Required	0.7	22 - 26 Aug 2016	Daily from 08.45 to 11.45 hours
English Language (SC01) (see 2.2.1.1 Common core)	Common Core	1.4	**Tests: Monday 15 August 17.30 hours.** **Aug - Oct 2016, depending on your group**	Assignment(s) and presentation

Fall 2016				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Study Design (CC01)	Common Core	4.3	29 Aug - 16 Sep 2016 (No lectures on Wednesday. The 3rd week is a study week)	16 Sep 2016; Resit: 11 Jan 2017
Biostatistical Methods I: Basic Principles (CC02)	Common Core	5.7	19 Sep - 14 Oct 2016 (No lectures on Wednesday. The 4th week is a study week)	14 Oct 2016; Resit: 13 Jan 2017
Economics of Health and Health Care (GW4568M)[1]	Required	5	Oct – Nov 2016 **Location: iBMG, EUR, Woudestein, Rotterdam**	To be announced. Resit: To be announced.
Health Technology Assessment (GW4546M)[2]	Required	5	Oct – Nov 2016 **Location: iBMG, EUR, Woudestein, Rotterdam**	To be announced. Resit: To be announced.
Biostatistical Methods II: Classical Regression Models (EP03)	Common Core	4.3	21 Nov - 9 Dec 2016 (No lectures on Wednesday. The 3rd week is a study week)	Group assignment (deadline 6 Dec 2016) and oral group exam on 8 or 9 Dec 2016; Resit: Deadline assignment 25 Jan 2017

CHRISTMAS BREAK 24 December 2016 - 08 January 2017

[1] This is an iBMG course, for which rules and regulations of iBMG apply. Questions regarding the iBMG courses can be emailed to: hepl@bmg.eur.nl

Research / Study programme component		ECTS	Dates	Examination / Resit
Research Proposal (RM-RES1)	Common Core	2.5	Deadline 31 January 2017	For details see section 2.3
Research period (RM-RES2)	Required	19.2		

Winter / Spring 2017				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Advanced elective courses	Elective	10[1]	You may select 2 of the following 4 elective courses of iBMG[2]: - Advanced Economic Evaluation (5 ECTS) - Patient Preferences in the Delivery of Health Care (5 ECTS) - Global Health Economics (5 ECTS) - Participating in HTA Research (5 ECTS) *limited number of students allowed*	

Seminars – common core
You are required to attend 24 research seminars as a part of your programme, obtaining 0.8 ECTS a year. For more information, see 2.3.8

[1] Because the elective courses all contain 5 ECTS you will acquire 1.3 ECTS too much.
[2] This is an iBMG course, for which rules and regulations of iBMG apply. Questions regarding the iBMG courses can be emailed to: hepl@bmg.eur.nl

Start 2015 - Second year in 2016

Summer 2016				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Causal Inference (ESP48)	Required	0.7	15 - 19 Aug 2016	Daily from 13.00 to 16.00 hours

Fall 2016				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Economics and Financing Health Care Systems (GW4567M)	Required	5	To be announced. **Location: iBMG, EUR, Woudestein, Rotterdam**	To be announced.

CHRISTMAS BREAK
24 December 2016 - 08 January 2017

Winter / Spring 2017				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Scientific Writing in English for Publication (SC07)	Common core	2	Winter 2017	Assignment(s)

Research / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Oral Presentation Research Project (PRES)	Common Core	1.4	Deadline: before July 3, 2017	For details see section 2.3
Continuation Research Period (RP-2013)	Required	50.5	Deadline Research Paper: before July 3, 2017	For details see section 2.3

Advanced courses - Seminars
You are required to attend 24 research seminars as a part of your programme, obtaining 0.8 ECTS a year. For more information, see 2.3.8

Graduation Ceremony
In order to officially complete your NIHES degree programme, you are required to attend the NIHES Graduation Ceremony. Graduation takes place in Rotterdam at the end of the Erasmus Summer Programme. See chapter 7 for further details.

4a RM in Health Sciences, medical students Erasmus MC

The RM Programme Health Sciences for medical students at Erasmus MC is a special programme of 120 ECTS for excellent medical students at Erasmus MC and runs parallel to their medical master programme. In principle all students follow the specialisation Clinical Epidemiology. In total, the Research Master combined with the medical Master runs 4 years. A limited number of students can be admitted to this programme.

4a.1 Aims of the programme

The aims of the programme for excellent medical students at Erasmus MC are the same for all RM in Health Sciences students (See section 4.1).

The ultimate goal of the Research Master in Health Sciences for excellent medical students is to scout excellent students at an early age, challenge them to become clinical investigators, foster them during their research- and clinical career and motivate them to become academic specialists and possibly future professors of medicine.

4a.2 Specific course information

All information in section 2.2 and section 4.2 is applicable to this programme. Additionally the following information is applicable.

4a.2.1 Elective courses at Harvard or Johns Hopkins

Participants in this programme have the opportunity to follow elective courses at Harvard or Johns Hopkins in June/July of their first Research Master year as part of their elective programme. All costs are at their own expense. You will receive more information about this possibility in fall 2016.

4a.2.2 Course exemptions from courses of your Master in Medicine

Please be aware that this information below may be subject to change. For correct information it is best you check the website of your Master in Medicine.

Upon successful completion of all courses mentioned below, you can be exempted from “thema Master 1a Methoden van klinisch en epidemiologisch onderzoek” of your Master in Medicine. For students who pass these courses after their first exam, NIHES will send a group request for exemption to the Examination Board of the Bachelor and Master in Medicine. Students who do not pass the exams in once need to send an exemption request themselves.
The courses involved are:

- The introductory Erasmus Summer Programme;
- Study Design (CC01);
- Biostatistical Methods I: Basic Principles (CC02).

For students who started their Master of Science programme before 2016, please check the requirements of your Master in Medicine.

For other exemptions for the medical programme, a request should be submitted to the Examination Board of Medicine. It is the responsibility of the student to request these exemptions, i.e. upon completion of the research project for your Research Master programme, you may request an exemption of the research project in your medicine programme (keuzeonderzoek), as well as for the elective internship (keuze-coschap).

For students who started the Research Master in 2013 or earlier:
Successful completion of KOW2 “Ever thought of doing research?” (during your Bachelor in Medicine) counts for 2.8 ECTS in your Research Master programme. If you did not take this course, you are required to take 2.8 ECTS elective courses in the research master programme. You may do so by attending courses in the Erasmus Summer Programme, which takes place during the summer holidays, after your first research master year, and/or by attending advanced electives during the winter/spring period.

4a.2.3 Final Exam

The final exam is a concluding oral exam for which you are required to give a presentation, and subsequently discuss your project with the exam committee. You are expected to explain your research project in brief and then to relate your research to:

- The theory and practice of your Master in Medicine and Research Master;
- The competencies you have gained in your Master in Medicine and Research Master;
- The consequences for your profession;
- The consequences for you and your career.

2nd year Research Master students will be enrolled in the information about the Final Exam in Canvas in the fall. Check the information in Canvas for application for the final exam (three months prior to actually taking the final exam).

4a.3 Specific research information

All information in sections 2.3 and 4.3 is applicable to Research Master students Health Sciences for medical students at Erasmus MC. Additionally the following information is applicable.

4a.3.1 Research proposal

Deadline for handing in your research proposal is mentioned in chapter 2.3.

4a.3.2 Presenting your research

4a.3.2.1 Symposium/Midterm presentation

Besides a presentation at the research department (see section 2.3), each year a symposium is held for medical students who are planning to finish their research project for the Research Master Health Sciences or Clinical Research. Students are required to present the research project in the presence of tutors and advisors. The date will be announced.

4a.4 Programme Overview MSc HS for medical students

4a.4.1 Combination of the programme with the regular medical curriculum

The table below shows the programme overview for students who started in 2016 or later. The parts of the MSc in Medicine (MSc Med) are shown in cursive. The figure on page 65 shows the schedule of the Research master programme Health Sciences, combined with the medical curriculum at Erasmus MC. For students who started their Research Master in 2015 or earlier we refer to the study guide of 2015-2016 or earlier.

Programme RM HS medical students – from start 2016
Exam programme in Osiris is NIHES-RMHS2014, specialisation Medicals Clinical Epidemiology

Calendar	Programme*	Part Exam programme OSIRIS	ECTS**
Year 1			**CE**
Aug-Oct	SC01	Common core	1.4
Sept-Dec	CC01, CC02, EP03	Common core	14.3
Jan	RM-RES1: Research proposal	Common core	2.5
Aug	Introductory ESP courses	Required	4.2
Nov	CE02, EP02	Required	7.1
Jan-Jul	MED-RES2: Research period	Required	27.9
Jan-Jun	Advanced elective courses	Elective	7.0
	Total ECTS First year RM		**64.4**
Year 2			
Aug yr 1 – May yr 2	SEM: 24 Research seminars	Common core	0.8
Apr-May	RM-RES1: Research presentation at research department	Common core	1.4
Feb-Apr	SC07	Common core	2.0
Feb-Mar	Advanced topics in Clinical Research (EWP)	Required	5.4
Feb-Aug	MED-RES2: Research period	Required	38.4
Feb-Apr	MED-RES2: Midterm Presentation	Required	1.4
Aug	3 weeks ESP or other advanced electives	Elective	4.2
	Total ECTS Second year RM		**53.6**
May-Jun	*Start internships MSc Med*	*MSc Med*	
Year 3			
Aug-Aug	*Continuation Internships MSc Med*	*MSc Med*	
Year 4			
Aug-Jun	*Continuation Internships MSc Med*	*MSc Med*	
After finalisation MSc Med	MED-RES2: Final exam	Required	2.0
	Total ECTS year 3+4 RM		**2.0**
	Total ECTS RM		**120.0**

*Specialisation RM (Spec.); Clinical Epidemiology (CE)

Course abbreviations can be found in Annex IV. Abbreviations research refer to codes in Osiris.

Dates and times of the courses can be found in the time table of your programme and specialisation (see chapter 4a).

**1.4 ECTS = 1 week

Programme Research Master Health Sciences for medical students (from start 2016)

ECTS research master					
		Year 1	Year 2	Year 3/4	Total
	Common core (courses)	15,7	2,8		**18,5**
	Common core (research)	2,5	1,4		**3,9**
	Required (courses)	11,3	5,4		**16,7**
	Required (research)	29,3	38,4	2	**69,7**
	Elective (courses)	7	4,2		**11,2**
	Holidays				
	Total ECTS per year	**65,8**	**52,2**	**2,0**	**120,0**
	Medicine				

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4a.5 Time tables 2016-2017

The following pages include the 2016 - 2017 timetables for the two-year Research Master in Health Sciences programme for excellent medical students at Erasmus MC (120 ECTS). This variant is available in the specialisation Clinical Epidemiology.
Please note that all programmes can be subject to change.
In addition, an important part of these programmes is dedicated to your research project. See chapter 2 for further details.
You are advised to regularly check Canvas for up-to-date course information.

4a.5.1 RM Health Sciences, medical students Erasmus MC, Start 2016 - First year

Summer 2016				
Courses / Study programme component		**ECTS**	**Dates**	**Time/Examination**
Principles of Research in Medicine (ESP01)	Required	0.7	8 - 12 Aug 2016	Daily from 08.45 to 11.45 hours
Clinical Trials (ESP14)	Required	0.7	8 - 12 Aug 2016	Daily from 13.00 to 16.00 hours
Methods of Clinical Research (ESP10)	Required	0.7	15 - 19 Aug 2016	Daily from 08.45 to 11.45 hours
Fundamentals of Medical Decision Making (ESP70)	Required	0.7	15 - 19 Aug 2016	Daily from 13.00 to 16.00 hours
The Practice of Epidemiologic Analysis (ESP65)	Required	0.7	22 - 26 Aug 2016	Daily from 08.45 to 11.45 hours
Health Economics (ESP25)	Required	0.7	22 - 26 Aug 2016	Daily from 13.00 to 16.00 hours
English Language (SC01) (see 2.2.1.1 Common core)	Common Core	1.4	**Tests: Monday 15 August 17.30 hours.** **Aug - Oct 2016, depending on your group**	Assignment(s) and presentation

Fall 2016				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Study Design (CC01)	Common Core	4.3	29 Aug - 16 Sep 2016 (No lectures on Wednesday. The 3rd week is a study week)	16 Sep 2016; Resit: 11 Jan 2017
Biostatistical Methods I: Basic Principles (CC02)	Common Core	5.7	19 Sep - 14 Oct 2016 (No lectures on Wednesday. The 4th week is a study week)	14 Oct 2016; Resit: 13 Jan 2017
Clinical Epidemiology (CE02)	Required	5.7	17 Oct - 11 Nov 2016 (No lectures on Wednesday. The 4th week is a study week)	11 Nov 2016; Resit: 20 Jan 2017
Methodologic Topics in Epidemiologic Research (EP02)	Required	1.4	14 - 18 Nov 2016 (No lectures on Wednesday)	18 Nov 2016; Resit: 18 Jan 2017
Biostatistical Methods II: Classical Regression Models (EP03)	Common Core	4.3	21 Nov - 9 Dec 2016 (No lectures on Wednesday. The 3rd week is a study week)	Group assignment (deadline 6 Dec 2016) and oral group exam on 8 or 9 Dec 2016; Resit: Deadline assignment 25 Jan 2017

CHRISTMAS BREAK
24 December 2016 - 08 January 2017

Research / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Research Proposal (RM-RES1)	Common Core	2.5	Deadline 31 January 2017	For details see section 2.3
Research period (MED-RES2)	Required	27.9		

Winter / Spring 2017				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Advanced elective courses	Elective	7 - 8.4	You may select 7 – 8.4 ECTS of elective courses. You may also choose to exchange courses in the 2nd elective Erasmus Summer Programme for more electives (4.2 ECTS, see below). See also section 2.2.1.3 for further details.	

Seminars – common core
You are required to attend 24 research seminars as a part of your programme, obtaining 0.8 ECTS. For more information, see 2.3.8

4a.5.2 RM Health Sciences, medical students Erasmus MC, start RM 2015, Time table second year

Summer 2016				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
3 weeks electives Erasmus Summer Programme (alternatively you may choose electives in winter/spring)	Elective	4.2	8 Aug - 26 Aug 2016	Depending on the course you choose.

CHRISTMAS BREAK 24 December 2016 - 08 January 2017

Winter / Spring 2017				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Scientific Writing in English for Publication (SC07)	Common core	2	Winter 2017	Assignment(s)
Pharmaco-epidemiology and drug safety (EWP03)	Required	1.9	To be announced.	To be announced
Advanced Topics in Clinical Trials (EWP10)	Required	1.9	To be announced.	To be announced
Advanced Analysis of Prognosis Studies (EWP13)	Required	0.9	To be announced.	To be announced
Principles of Epidemiologic Data-analysis (EWP25)	Required	0.7	To be announced.	Exam: last course day; Resit: To be announced
Advanced elective courses	Elective		If you did not attend the full number of elective courses in 2015-2016, you should take them this semester. See section 2.2.1.3 for further details.	

Research / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Symposium/Midterm Presentation Research Project (SYMP)	Required	1.4	Deadline 2017 to be announced.	For details see section 2.3.5
Continuation Research Period (RP-MED)	Required	38.4	Deadline research paper 2017 to be announced.	For details see section 2.3

Seminars – common core
You are required to attend 24 research seminars as a part of your programme, obtaining 0.8 ECTS a year. For more information, see 2.3.8

4a.5.3 RM Health Sciences, medical students Erasmus MC, start RM 2014

Research / Study programme component		ECTS	Dates	Examination / Resit
Oral Presentation Research Project (PRES)	Common Core	1.4	Deadlines Sept - Dec 2017 in Canvas	For details see section 2.3
Continuation Research Period (RP-MED)	Required	6.4	Deadline Research Paper Sept - Dec 2017 in Canvas	For details see section 2.3

4a.5.4 RM Health Sciences, medical students Erasmus MC, preliminary 2012, start RM 2013 Option 2, Time table second year[1]

Fall 2016				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Biostatistical Methods II: Classical Regression Models (EP03)	Common Core	4.3	21 Nov - 9 Dec 2016 (No lectures on Wednesday. The 3rd week is a study week)	Group assignment (deadline 6 Dec 2016) and oral group exam on 8 or 9 Dec 2016; Resit: Deadline assignment 25 Jan 2017

Research / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Symposium/Midterm Presentation Research Project (SYMP)	Required	1.4	Deadline 2017 to be announced.	For details see section 2.3.5
Continuation Research Period (RP-MED)	Required	30		For details see section 2.3

CHRISTMAS BREAK
24 December 2016 - 08 January 2017

Winter / Spring 2017				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Scientific Writing in English for Publication (SC07)	Common core	2	Winter 2017	Assignment(s)
Advanced elective courses	Elective	2.8 – 4.2	You may select 2.8 – 4.2 ECTS of elective courses. If you did not attend the full number of elective ESP courses (4.2 ECTS), you should take them this semester. See section 2.2.1.3	

Advanced courses - Seminars
You are required to attend in total 32 seminars as part of your programme, obtaining 6 ECTS. For more information, see 2.3.8

Research - required		
Final Exam **for all students after finalisation of MSc Medicine** (FE)	To be announced in Canvas.	Oral exam

Graduation Ceremony
In order to officially complete your NIHES degree programme, you are required to attend the NIHES Graduation Ceremony. Graduation takes place in Rotterdam at the end of the Erasmus Summer Programme. See chapter 7 for further details.

[1] RM Health Sciences, preliminary 2012, start RM 2013 Option 1 follow internships for their medical study and only need to do their final exam in 2017.

5. Research Master in Clinical Research (120 ECTS)

The Research Master in Clinical Research (120 ECTS) is available in two learning modes: a two-year full time variant, and a variant for excellent medical students (120 ECTS). Chapter 5a gives specific information on the variant for excellent medical students is available in.

5.1 Aims of the programme

The Research Master programme in Clinical Research aims to provide students with a thorough understanding of methods in clinical research and sufficient knowledge of clinical specialist areas, for example medical technology, immunology or molecular biology. On the basis of this knowledge, the student will be prepared to write a research protocol and to perform research. Students should acquire the following competencies:

- Ability to formulate a clinical problem and translate it into a scientific question;
- Ability to perform an extensive study of the literature concerning a clinical problem;
- Ability to translate a scientific question into a research protocol;
- Acquisition of sufficient knowledge of existing methods of clinical scientific research, biostatistical analytical methods, laws, regulations and ethics and the abilities to use such knowledge in a research protocol;
- Ability to conduct the research, collect and analyse data, and draw conclusions;
- Ability to write a Master's thesis, including the objective(s) of the investigation, a summary of the literature, materials, methods, results, discussion and conclusions of the research project and to present these findings at scientific meetings. Publication of the research findings in an international peer-reviewed journal is encouraged.

This skills set will enable students to become researchers with the ability to complete a PhD programme

5.2 Specific course information

All information in section 2.2 is applicable to Research Master students in Clinical Research. The Research Master in Clinical Research students additionally are required to attend and pass the Scientific Writing in English for Publication course (see below).

5.2.1 Scientific Writing in English for Publication (SC07)

This course is compulsory for all Research Master students. It consists of four to five days and focuses on the writing of correct and readable scientific articles in English.

5.3 Specific research information

The research information for Clinical Research students is somewhat different from that for Health Sciences students. Below you find an overview of the specific requirements and responsibilities.

5.3.1 Clinical Research Advisory Board

The Clinical Research Advisory Board guides the study progress of the Clinical Research students. The Board meets every few months. Furthermore, members of the Board are part of the defence committee.

The selection committee will choose an advisor of the Clinical Research Advisory Board based on your research ambitions.

5.3.2 Advisor Clinical Research

The advisor will receive your curriculum vitae. From that point on, it is up to your advisor and you to search for a suitable research project and tutor. When you started your RM Clinical Research in 2015, you need to inform your NIHES programme officer at nihes@erasmusmc.nl about your choice of tutor **30 October 2016 the latest**.

Primary tasks of the advisor are:

- to find a tutor on the basis of the students preferences and possibilities of the research group/department;
- to keep informed about the study progress;
- to agree upon the research proposal and to have regular meetings with student and tutor about the study progress;
- to sign for approval on several aspects in the Personal Education Programme (see sub-section below);
- to answer questions and assist the student in solving problems that are not directly connected to the research project and tasks of the tutor;
- to be present at the symposium.

5.3.3 Personal tutor

You will work on your research project under the guidance and supervision of the personal tutor to whom you are assigned in discussion with your advisor. All tutors are senior faculty members at the Erasmus University. Each tutor has considerable experience (usually minimally at PhD level) in one or more specific research subjects.

The primary tasks of the tutor are described in sub-section 2.3.2. Additionally, tutors of the RM Clinical Research students have the following responsibilities.

- to monitor and report on the student's progress and results together with the advisor;
- to sign for approval on several aspects in the Personal Education Programme (see sub-section below);
- to report the research progress to the advisor of the Clinical Research Advisory Board;
- to be present at the final defence meeting of the student.

5.3.4 Personal Education Programme

You need to download the Personal Educational Plan (PEP), which is avalilable in General Information in Canvas. In the PEP you are expected to plan your personal programme. The following topics are covered: meetings with your advisor and tutor, planning elective courses and registering attended elective courses and research seminars. You may take elective courses at the different research schools and research masters in Erasmus MC, provided that the course organization and your tutor and advisor have given permission. The student is responsible for organising the meetings according to the PEP, for adding the summaries and for obtaining signatures from the advisor and tutor where necessary. Attended seminars must be registered in the PEP. The student is requested to collect proof of attendance or a signature of the lecturer of the seminar (for more information on seminars see section 2.5 ‘seminars’.

5.3.5 Practical research

Sub-section 2.3.3 is applicable to the RM Clinical Research. Additionally, you are required to make an appointment with your tutor and advisor twice a year, first to discuss your research proposal and afterwards to monitor the progress of your research project.

5.3.6 Your research proposal

See sub-section 2.3.4

5.3.7 Presenting your research

See sub-section 2.3.5.

5.3.8 Research paper

See sub-section 2.3.6.

5.3.9 Research Assessment

See sub-section 2.3.7.

Additionally, you have to defend your research paper in front of a committee with members of the Clinical Research Advisory Board and your tutor. In due time several dates will be announced, and you are expected to pick one in consultation with your tutor.

The committee will assess your defence on:

- Presentation;
- Discussion;
- Overview on topic;
- Ideas about future research.

The final grade for your research project is the average of these assessments. The assessment and the final grade will be checked and approved by the Clinical Research Advisory Board and your tutor. The final grade is classified as mentioned in sub-section 2.3.7.

Note that once your article has been published, a copy should be sent to the NIHES administrative office. Furthermore, Clinical Research students must always mention or refer to “Erasmus MC” when presenting or publishing their research findings.

5.4 Programme overview RM CR

Exam programme in Osiris is NIHES-RMCR2014

Calendar	Programme*	Part Exam programme OSIRIS	ECTS**
Year 1			
Aug-Oct	SC01	Common core	1.4
Sep-Dec	CC01, CC02, CE02, EP02, EP03	Common core	21.4
Jan	M-RES1: Research proposal	Common core	2.5
Aug	Introductory ESP courses	Required	4.2
Jan-Jul	RM-RES2: Research period	Required	25.9
Jun-Jul	Advanced elective courses	Elective	4.2
	Total ECTS First year RM		**59.6**
Year 2			
Aug yr 1-Aug yr 2	SEM: 24 Research Seminars	Common core	0.8
Feb-Apr	SC07	Common core	2.0
Feb-Jun	Research presentation at research department	Common core	1.4
Feb-Mar	Advanced topics in Clinical Research (EWP)	Required	5.4
Feb-Apr	RM-RES2:Midterm Presentation research project	Required	1.4
Feb-Jul	Research period including thesis defense	Required	42.4
Aug	3 weeks ESP or other advanced electives	Required	4.2
Jan-Jun	Advanced elective courses	Elective	2.8
	Total ECTS Second year RM		**60.4**
	Total ECTS		**120.0**

*Course abbreviations can be found in Annex IV. Abbreviations research refer to codes in Osiris.

Dates and times of the courses can be found in the time table of your programme and specialisation (see chapter 5).

**1.4 ECTS = 1 week

5.5 Time tables 2016-2017

5.5.1 RM Clinical Research, Start 2016 - First year

Summer 2016				
Courses / Study programme component		**ECTS**	**Dates**	**Time/Examination**
Principles of Research in Medicine (ESP01)	Required	0.7	8 - 12 Aug 2016	Daily from 08.45 to 11.45 hours
Clinical Trials (ESP14)	Required	0.7	8 - 12 Aug 2016	Daily from 13.00 to 16.00 hours
Methods of Clinical Research (ESP10)	Required	0.7	15 - 19 Aug 2016	Daily from 08.45 to 11.45 hours
Fundamentals of Medical Decision Making (ESP70)	Required	0.7	15 - 19 Aug 2016	Daily from 13.00 to 16.00 hours
The Practice of Epidemiologic Analysis (ESP65)	Required	0.7	22 - 26 Aug 2016	Daily from 08.45 to 11.45 hours
Health Economics (ESP25)	Required	0.7	22 - 26 Aug 2016	Daily from 13.00 to 16.00 hours
English Language (SC01) (see 2.2.1.1 Common core)	Common Core	1.4	**Tests: Monday 15 August 17.30 hours.** **Aug - Oct 2016, depending on your group**	Assignment(s) and presentation

Fall 2016				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Study Design (CC01)	Common Core	4.3	29 Aug - 16 Sep 2016 (No lectures on Wednesday. The 3rd week is a study week)	16 Sep 2016; Resit: 11 Jan 2017
Biostatistical Methods I: Basic Principles (CC02)	Common Core	5.7	19 Sep - 14 Oct 2016 (No lectures on Wednesday. The 4th week is a study week)	14 Oct 2016; Resit: 13 Jan 2017
Clinical Epidemiology (CE02)	Common Core	5.7	17 Oct - 11 Nov 2016 (No lectures on Wednesday. The 4th week is a study week)	11 Nov 2016; Resit: 20 Jan 2017
Methodologic Topics in Epidemiologic Research (EP02)	Common Core	1.4	14 - 18 Nov 2016 (No lectures on Wednesday)	18 Nov 2016; Resit: 18 Jan 2017
Biostatistical Methods II: Classical Regression Models (EP03)	Common Core	4.3	21 Nov - 9 Dec 2016 (No lectures on Wednesday. The 3rd week is a study week)	Group assignment (deadline 6 Dec 2016) and oral group exam on 8 or 9 Dec 2016; Resit: Deadline assignment 25 Jan 2017

CHRISTMAS BREAK
24 December 2016 - 08 January 2017

Research / Study programme component		ECTS	Dates	Examination / Resit
Research Proposal (RM-RES1)	Common Core	2.5	Deadline 31 January 2017	For details see section 2.3
Research period (RM-RES2)	Required	25.9		

Winter / Spring 2017				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Advanced elective courses	Elective	4.2 – 5.6	You may select 4.2 – 5.6 ECTS of elective courses. You may also choose to exchange courses in the 2nd elective Erasmus Summer Programme for more electives (4.2 ECTS, see below). See also section 2.2.1.3 for further details.	

Seminars – common core
You are required to attend 24 research seminars as a part of your programme, obtaining 0.8 ECTS. For more information, see 2.3.8

5.5.2 RM Clinical Research, Second year 2016

Summer 2016				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
3 weeks electives Erasmus Summer Programme (alternatively you may choose electives in winter/spring)	Elective	4.2	8 Aug - 26 Aug 2016	Depending on the course you choose.

CHRISTMAS BREAK 24 December 2016 - 08 January 2017

Winter / Spring 2017				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Scientific Writing in English for Publication (SC07)	Common core	2	Winter 2017	Assignment(s)
Pharmaco-epidemiology and drug safety (EWP03)	Required	1.9	To be announced.	To be announced
Advanced Topics in Clinical Trials (EWP10)	Required	1.9	To be announced.	To be announced
Advanced Analysis of Prognosis Studies (EWP13)	Required	0.9	To be announced.	To be announced
Principles of Epidemiologic Data-analysis (EWP25)	Required	0.7	To be announced.	Exam: last course day; Resit: To be announced
Advanced elective courses	Elective	2.8 – 4.2	You may select 2.8 – 4.2 ECTS of elective courses. If you did not attend the full number of elective ESP courses (4.2 ECTS), you should take them this semester. See section 2.2.1.3	

Research / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Midterm Presentation Research Project (RM-RES2)	Required	1.4	Deadline 2017 to be announced.	For details see section 2.3.5
Oral Presentation Research Project (RM-RES1)	Common Core	1.4	Deadline: before July 3, 2017	For details see section 2.3
Continuation Research Period (RM-RES2)	Required	42.4	Defence of research project and paper to be announced in Canvas	Oral exam

Seminars – common core
You are required to attend 24 research seminars as a part of your programme, obtaining 0.8 ECTS a year. For more information, see 2.3.8

Graduation Ceremony
In order to officially complete your NIHES degree programme, you are required to attend the NIHES Graduation Ceremony. Graduation takes place in Rotterdam in at the end of the Erasmus Summer Programme. See chapter 7 for further details.

5a RM in Clinical Research, medical students Erasmus MC

The Research Master Programme Clinical Research for medical students at Erasmus MC is a special programme of 120 ECTS for excellent medical students at Erasmus MC and runs parallel to their medical master programme. In total, the Research Master, combined with the medical Master, runs 4 years. A limited number of students can be admitted to this programme. Other students should apply for the general Research Master in Clinical Research.

5a.1 Aims of the programme

The aims of the programme for excellent medical students at Erasmus MC are the same for all research Master students Clinical Research (See section 5.1).

The ultimate goal of the Research Master in Clinical Research for excellent medical students is to scout talented students at an early age, challenge them to become clinical investigators, foster them during their research- and clinical career and motivate them to become academic specialists and possibly future professors of medicine.

5a.2 Specific course information

All information in section 2.2 and section 5.2 is applicable to Research Master students Clinical Research for medical students at Erasmus MC. Additionally the following information is applicable.

5a.2.1 Elective courses at Harvard or Johns Hopkins

Participants in this programme have the opportunity to follow elective courses at Harvard or Johns Hopkins in June/July of their first Research Master year as part of their elective programme. All costs are at their own expense. You will receive more information about this possibility in fall 2016.

5a.2.2 Course exemptions from courses of your Master of Science in Medicine

Please be aware that this information below may be subject to change. For correct information it is best you check the website of your Master of Science in Medicine. For exemptions to the medical programme, a request should be handed in to the Examination Board of Medicine. It is the responsibility of the student to take care of these exemptions.

Upon successful completion of all courses mentioned below, you can be exempted from “thema Master 1a Methoden van klinisch en epidemiologisch onderzoek” of your Master in Medicine. For students who pass these courses after their first exam, NIHES will send a request for exemption to the Examination Board of the Bachelor and Master of Science in Medicine. Students who do not pass the exams in once need to send an exemption request themselves.The courses involved are:

- The introductory Erasmus Summer Programme;
- Study Design (CC01);
- Biostatistical Methods I: Basic Principles (CC02).

For students who started their Master of Science programme before 2016, please check the requirements of your Master in Medicine.

For other exemptions for the medical programme, a request should be submitted to the Examination Board of Medicine. It is the responsibility of the student to request these exemptions, i.e. upon completion of the research project for your Research Master programme, you may request an exemption of the research project in your medicine programme (keuzeonderzoek), as well as for the elective internship (keuze-coschap).

For students who started the Research Master in 2013 or earlier:

Successful completion of KOW2 “Ever thought of doing research?” (during your Bachelor in Medicine) counts for 2.8 ECTS in your Research Master programme. If you did not take this course, you need to attend 2.8 ECTS elective courses in the research master programme. You may do so by attending courses in the Erasmus Summer Programme, which takes place during the summer holidays, after your first research master year, and/or by attending advanced electives during the winter/spring period.

5a.2.3 Final Exam

The final exam is a concluding oral exam for which you are required to give a presentation, and subsequently discuss your project with the exam committee. You are expected to explain your research project in brief and then to relate your research to: ◦

- The theory and practice of your Master in Medicine and Research Master;
- The competencies you have gained in your Master in Medicine and Research Master;
- The consequences for your profession;
- The consequences for you and your career.

5a.3 Specific research information

All information in section 5.3 is applicable to Research Master students Clinical Research for medical students at Erasmus MC. Additionally the following information is applicable.

5a.3.1 Research proposal

Deadline for handing in your research proposal is mentioned in chapter 2.3.4.

5a.3.2 Presenting your research

5a.3.2.1 Symposium/Midterm presentation

Besides a presentation of the research proposal and a presentation on your research department (see section 5.3), each year a symposium is held for medical students who are planning to finish their research project for the Research Master Health Sciences or Clinical Research. Students are required to present the research project in the presence of tutors and advisors. The date will be announced.

5a.4 Programme Overview RM CR for medical students

5a.4.1 Combination of the programme with the regular medical curriculum

The table below shows the programme overview for students from start group 2014. The parts of the MSc in Medicine (MSC Med) are shown in cursive. The figure on page 81 shows the schedule of the RM CR, combined with the medical curriculum at Erasmus MC. For students who started their Research Master in 2013 or earlier we refer to the study guide of 2014-2015 or earlier.

Programme RM CR medical students – from start 2016
Exam programme in Osiris is NIHES-RMCR2014, specialisation Medicals Clinical Research

Calendar	Programme*	Part Exam programme OSIRIS	ECTS**
Year 1			
Aug-Oct	English Language course (SC01)	Common core	1.4
Sep-Oct	CC01, CC02, CE02, EP02, EP03	Common core	21.4
Jan	RM-RES1: Research proposal	Common core	2.5
Aug	Introductory ESP courses	Required	4.2
Jan-Jul	MED-RES2: Research period	Required	27.9
Jan-Jun	Advanced elective courses	Elective	7.0
	Total ECTS First year RM		**64.4**
Year 2			
Aug-yr 1 – May yr 2	24 Research seminars	Common core	0.8
Apr-May	RM-RES1: Research presentation at research department	Common core	1.4
Feb-Apr	SC07	Common core	2.0
Feb-Mar	Advanced topics in Clinical Research (EWP)	Required	5.4
Feb-Aug	MED-RES2: Research period including thesis defence	Required	38.4
Aug	3 weeks ESP or other advanced electives	Elective	4.2
	Total ECTS Second year RM		**53.6**
May-Jun	*Start internships MSc Med*	*MSc Med*	
Year 3			
Aug-Aug	*Continuation of Internships MSc Med*	*MSc Med*	
Year 4			
Aug-Jun	*Continuation of Internships MSc Med*	*MSc Med*	
After finalisation MSc Med	MED-RES2: Final exam	Required	2.0
	Total ECTS year 3+4 RM		**2.0**
	Total ECTS Research Master		**120.0**

*Course abbreviations can be found in Annex IV. Research abbreviations refer to codes in Osiris.

Dates and times of the courses can be found in the time table of your programme and specialisation (see chapter 5a).

**1.4 ECTS = 1 week

Programme Research Master Clinical Research (from start 2016)

ECTS research master	Year 1	Year 2	Year 3/4	Total
Common core (courses)	15,7	2,8		**18,5**
Common core (research)	2,5	1,4		**3,9**
Required (courses)	11,3	5,4		**16,7**
Required (research)	29,3	38,4	2	**69,7**
Elective (courses)	7	4,2		**11,2**
Holidays				
Total ECTS per year	**65,8**	**52,2**	**2,0**	**120,0**
Medicine				

	wknr	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Year 1																																																						
Med MA 1																																																					
RM1-courses		ESP			CC01, CC02, CE02, SC01, EP02, EP03																				Advanced elective courses																																
RM1-research												Research proposal												Research period																																
RM1-seminars		Research seminars																						Research seminars																																
ECTS RM		1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4			1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4
	wknr	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Year 2																																																						
Med MA 1																																									Internships														
RM2-courses		Elective ESP																						SC07						EWP+exams																								
RM2-research					Research period																			Research period, inclusive mid-term presentation, oral presentation and defence																																
RM2-seminars					Research seminars																			Research seminars (in total 24: 0,8 ECTS)																																
ECTS RM		1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4			1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,8														
Year 3		32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Med MA2		Internships																																																			
RM2-research																																																					
Year 4		32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Med MA3		Internships																																							"Oudste coschap"														
RM2-finalisation																																																			Fin. exam		
ECTS RM																																																			1,4	0,6

Notes concerning internships master medicine:

*** First possibility to start internships medicine is in week 19, 2018. Otherwise in week 29, 2018.**

*** Internships Master medicine are two years without including 6 weeks "Keuzecoschap"**

*** Information internships master medicine is with reservation. Exact information is responsibility of MSc Medicine.**

5a.5 Time tables 2015-2016

The following pages include the 2016 - 2017 timetables for the two-year Research Master in Health Sciences programme for excellent medical students at Erasmus MC (120 ECTS). This variant is available in the specialisation Clinical Epidemiology.
Please note that all programmes can be subject to change.
In addition, an important part of these programmes is dedicated to your research project. See chapter 2 for further details.
You are advised to regularly check Canvas for up-to-date course information.

5a.5.1 RM Clinical Research, medical students Erasmus MC, Start 2016 - First year

Summer 2016				
Courses / Study programme component		**ECTS**	**Dates**	**Time/Examination**
Principles of Research in Medicine (ESP01)	Required	0.7	8 - 12 Aug 2016	Daily from 08.45 to 11.45 hours
Clinical Trials (ESP14)	Required	0.7	8 - 12 Aug 2016	Daily from 13.00 to 16.00 hours
Methods of Clinical Research (ESP10)	Required	0.7	15 - 19 Aug 2016	Daily from 08.45 to 11.45 hours
Fundamentals of Medical Decision Making (ESP70)	Required	0.7	15 - 19 Aug 2016	Daily from 13.00 to 16.00 hours
The Practice of Epidemiologic Analysis (ESP65)	Required	0.7	22 - 26 Aug 2016	Daily from 08.45 to 11.45 hours
Health Economics (ESP25)	Required	0.7	22 - 26 Aug 2016	Daily from 13.00 to 16.00 hours
English Language (SC01) (see 2.2.1.1 Common core)	Common Core	1.4	**Tests: Monday 15 August 17.30 hours.** **Aug - Oct 2016, depending on your group**	Assignment(s) and presentation

Fall 2016				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Study Design (CC01)	Common Core	4.3	29 Aug - 16 Sep 2016 (No lectures on Wednesday. The 3rd week is a study week)	16 Sep 2016; Resit: 11 Jan 2017
Biostatistical Methods I: Basic Principles (CC02)	Common Core	5.7	19 Sep - 14 Oct 2016 (No lectures on Wednesday. The 4th week is a study week)	14 Oct 2016; Resit: 13 Jan 2017
Clinical Epidemiology (CE02)	Common Core	5.7	17 Oct - 11 Nov 2016 (No lectures on Wednesday. The 4th week is a study week)	11 Nov 2016; Resit: 20 Jan 2017
Methodologic Topics in Epidemiologic Research (EP02)	Common Core	1.4	14 - 18 Nov 2016 (No lectures on Wednesday)	18 Nov 2016; Resit: 18 Jan 2017
Biostatistical Methods II: Classical Regression Models (EP03)	Common Core	4.3	21 Nov - 9 Dec 2016 (No lectures on Wednesday. The 3rd week is a study week)	Group assignment (deadline 6 Dec 2016) and oral group exam on 8 or 9 Dec 2016; Resit: Deadline assignment 25 Jan 2017

CHRISTMAS BREAK
24 December 2016 - 08 January 2017

Research / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Research Proposal (RM-RES1)	Common Core	2.5	Deadline 31 January 2017	For details see section 2.3

Research period (MED-RES2)	Required	27.9		

Winter / Spring 2017				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Advanced elective courses	Elective	7 - 8.4	You may select 7 – 8.4 ECTS of elective courses. You may also choose to exchange courses in the 2nd elective Erasmus Summer Programme for more electives (4.2 ECTS, see below). See also section 2.2.1.3 for further details.	

Seminars – common core
You are required to attend 24 research seminars as a part of your programme, obtaining 0.8 ECTS. For more information, see 2.3.8

5a.5.2 RM Clinical Research, medical students Erasmus MC, start RM 2015, Time table second year

Summer 2016				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
3 weeks electives Erasmus Summer Programme (alternatively you may choose electives in winter/spring)	Elective	4.2	8 Aug - 26 Aug 2016	Depending on the course you choose.

CHRISTMAS BREAK 24 December 2016 - 08 January 2017

Winter / Spring 2017				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Scientific Writing in English for Publication (SC07)	Common core	2	Winter 2017	Assignment(s)
Pharmaco-epidemiology and drug safety (EWP03)	Required	1.9	To be announced.	To be announced
Advanced Topics in Clinical Trials (EWP10)	Required	1.9	To be announced.	To be announced
Advanced Analysis of Prognosis Studies (EWP13)	Required	0.9	To be announced.	To be announced
Principles of Epidemiologic Data-analysis (EWP25)	Required	0.7	To be announced.	Exam: last course day; Resit: To be announced
Advanced elective courses	Elective		If you did not attend the full number of elective courses in 2015-2016, you should take them this semester. See section 2.2.1.3 for further details.	

Research / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Symposium/Midterm Presentation Research Project (SYMP)	Required	1.4	Deadline 2017 to be announced.	For details see section 2.3.5
Continuation Research Period plus defence (RP-MED)	Required	38.4	Defence of research project and paper to be announced in Canvas	Oral exam

Seminars – common core
You are required to attend 24 research seminars as a part of your programme, obtaining 0.8 ECTS a year. For more information, see 2.3.8

5a.5.3 RM Clinical Research, medical students Erasmus MC, start RM 2014

Research / Study programme component		ECTS	Dates	Examination / Resit
Oral Presentation Research Project (PRES)	Common Core	1.4	Deadline Sept - Dec 2017 in Canvas	For details see section 2.3
Continuation Research Period (RP-MED)	Required	6.4	Deadline Research Paper Sept - Dec 2017 in Canvas	For details see section 2.3

5a.5.4 RM Clinical Research, medical students Erasmus MC, preliminary 2012, start RM 2013 Option 2, Time table second year[1]

Fall 2016				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Biostatistical Methods II: Classical Regression Models (EP03)	Common Core	4.3	21 Nov - 9 Dec 2016 (No lectures on Wednesday. The 3rd week is a study week)	Group assignment (deadline 6 Dec 2016) and oral group exam on 8 or 9 Dec 2016; Resit: Deadline assignment 25 Jan 2017

Research / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Midterm Presentation Research Project (PRES)	Required	1.4	Deadline 2017 to be announced.	For details see section 2.3.5
Continuation Research Period (RP-MED)	Required	30		For details see section 2.3

CHRISTMAS BREAK
24 December 2016 - 08 January 2017

Winter / Spring 2017				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Scientific Writing in English for Publication (SC07)	Common core	2	Winter 2017	Assignment(s)
Advanced elective courses	Elective	2.8 – 4.2	You may select 2.8 – 4.2 ECTS of elective courses. If you did not attend the full number of elective ESP courses (4.2 ECTS), you should take them this semester. See section 2.2.1.3	

Advanced courses - Seminars
You are required to attend in total 32 seminars as part of your programme, obtaining 6 ECTS. For more information, see 2.3.8

Research - required		
Final Exam **for all students after finalisation of MSc Medicine** (FE)	To be announced in Canvas	Oral exam

Graduation Ceremony
In order to officially complete your NIHES degree programme, you are required to attend the NIHES Graduation Ceremony. Graduation takes place in Rotterdam at the end of the Erasmus Summer Programme. See chapter 7 for further details.

[1] RM Clinical Research, preliminary 2012, start RM 2013 Option 1 follow internships for their medical study and only need to do their final exam in 2017.

6. Doctor of Science Programmes (70 ECTS)

Our one-year, full-time Doctor of Science programme (70 ECTS) runs from August 2015 until the end of August 2016. It is almost entirely devoted to research, either at one of the departments or research groups affiliated with NIHES, or at your home institution. Either way, you will be guided and supervised by a senior scientist, your tutor.
The programme is available in four key disciplines of NIHES:

- Epidemiology;
- Clinical Epidemiology;
- Genetic Epidemiology;
- Public Health.

Upon successful completion you will be awarded a Doctor of Science diploma[1] by the Erasmus University Rotterdam in the discipline of your choice. You compose your DSc programme by choosing the subject for your research project and elective courses. The programme outline, the application and admission procedures, and an online application form are available on the NIHES website.

6.1 Aims of the programmes

- Acquire post-MSc research experience;
- Increase chances of qualifying for a PhD research project;
- Ability to independently conduct the research, collect and analyse data, and draw conclusions;
- Ability to write two research papers, including the objective(s) of the investigation, a summary of the literature, materials, methods, results, discussion and conclusions of the research project and to present these findings at scientific meetings. Publication of the research findings in an international peer-reviewed journal is encouraged.

6.2 Specific course information

The information in section 2.2 is applicable to DSc students. You will attend a selection of advanced courses in the Erasmus Summer Programme, a course on data-analysis and electives.

6.3 Specific research information

The information in section 2.3 is applicable to DSc students. The research project culminates in the writing of two articles that should be ready for submission to an international scientific journal.

[1] Please note that the Doctor of Science programme is not accredited, nor is the diploma legally recognized. This non-degree programme is recognized only by the Erasmus University Rotterdam.

6.4 Programme Overview DSc programme (70 ECTS)

Calendar	Programme*	Part Exam programme OSIRIS	ECTS **
Aug	Courses ESP	Required	2.8
Feb-Mar	EWP25	Required	0.7
Feb-Mar	SC17	Required	1.4
Mar-May	CE09	Required	1.4
Sep-Jul	Research period	Required	62.3
Jan-Jun	Advanced elective courses	Elective	1.4
	Total ECTS		**70.0**

*Course abbreviations can be found in Annex IV.

Dates and times of the courses can be found in the time table of your programme (see chapter 6).

**1.4 ECTS = 1 week

6.5 Time tables 2016-2017

6.5.1 Time table for the Doctor of Science programme

Summer 2016				
Courses / Study programme component		**ECTS**	**Dates**	**Time/Examination**
Conceptual Foundation of Epidemiologic Study Design (ESP38)	Required	0.7	8 - 12 Aug 2016	Daily from 08.45 to 11.45 hours
HIGHLY RECOMMENDED: Advances in Epidemiologic Analysis (ESP64)	Required	0.4	8 - 12 Aug 2016	Daily from 16.00 to 17.00 hours
History of Epidemiologic Ideas (ESP53)	Required	0.7	15 - 19 Aug 2016	Daily from 08.45 to 11.45 hours
Causal Inference (ESP48)	Required	0.7	15 - 19 Aug 2016	Daily from 13.00 to 16.00 hours
Causal Mediation Analysis (ESP69)	Required	0.7	22 - 26 Aug 2016	Daily from 8.45 to 11.45 hours

CHRISTMAS BREAK 24 December 2016 - 08 January 2017

Winter / Spring 2017				
Courses / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Principles of Epidemiologic Data-analysis (EWP25)	Required	0.7	To be announced.	Exam: last course day; Resit: To be announced
Bayesian Statistics (CE09)	Required	1.4	To be announced.	To be announced.
Courses for the Quantative Researcher (SC17)	Required	1.4	To be announced.	To be announced
Advanced elective courses	Elective	1.4 – 2.8	You may select 1.4 - 2.8 ECTS of elective courses. See section 2.2.1.3 for further details.	

Research / Study programme component		**ECTS**	**Dates**	**Examination / Resit**
Research Period (DSC-RP)	Required	62.3	Deadline 2 Research Papers: before July 24, 2017	For details see section 2.3

Graduation Ceremony
In order to officially complete your NIHES programme, you are required to attend the NIHES Graduation Ceremony. Graduation takes place in Rotterdam in the end of the Erasmus Summer Programme. See chapter 7 for further details.

7. Graduation

7.1 Requirements

To complete your programme, you are required to attend the NIHES Graduation Ceremony. This is held on the last Friday of the Erasmus Summer Programme in the late afternoon and includes a festive drink after the ceremony.

Registration for the Graduation Ceremony is possible once the following conditions have been met:

- You have successfully completed all compulsory and elective courses and research requirements included in your programme;
- You have presented your research to your department, and this is confirmed by your tutor in the Research Assessment Form (not required for DSc students);
- You have successfully completed your research paper (or papers);
- You have submitted your research paper (for Master students) or 2 papers (for DSc students) in Canvas before the deadline, please note that in July your tutor may be on holiday; for Clinical Research students: in time for your defence);
- You have settled all NIHES tuition fees;
- For Clinical Research students: you have successfully defended your research paper to a committee with members of the Clinical Research Advisory Board and your tutor.
- For students Health Sciences and DSc students: Your tutor and second tutor have assessed and approved your paper(s);

In April/May you will receive full details about the graduation ceremony including a registration form.

7.2 NIHES Awards

Each year, during the Graduation Ceremony two awards are presented.
Two NIHES Awards:

- to the graduate of the Master of Science in Health Sciences (70 ECTS), who is the author of the best research paper written under the guidance of a NIHES tutor in the current academic year;
- to the graduate of the Research Master in Health Sciences (120 ECTS) or Research Master in Clinical Research (120 ECTS), who is the author of the best research paper written under the guidance of a NIHES tutor in the current academic year.
-

Each award consists of a certificate and €500.

For the NIHES Awards, all tutors and scientific staff involved in the Master of Science in Health Sciences and Master of Science in Clinical Research programmes may nominate one or more students they believe to be eligible for an award. The best articles will be selected by an Award Committee chaired by Professor Hofman, Science Director of the Netherlands Institute for Health Sciences.

7.3 Your diploma

At the graduation ceremony you will receive your diploma, together with a grades list and diploma supplement.

Note that you need to legalize those documents to be able to use them abroad for study or work. More information about legalisation can be found on the website of the Dutch Education Regulation DUO, under “Legalization of your Dutch educational documents”.

8. After graduation

8.1 Continue your research training at NIHES

8.1.1 Doctor of Science programmes

If you successfully finished your Master of Science Programme and would like to acquire more research experience or increase your chances of qualifying for a PhD research project, consider continuing towards a Doctor of Science diploma at NIHES. This additional year of research training is almost entirely devoted to research. More information about the programme can be found in chapter 6. If you are interested, please contact the NIHES programme coordinator to discuss your eligibility. Note that the application deadline is 1 May.

8.1.2 PhD research project

Graduates who wish to go on to take a PhD should discuss this with their tutor. Depending on the research projects and options available, students may be eligible for a PhD position at one of the institutes participating in NIHES. Please note that NIHES does NOT itself offer and/or mediates for PhD positions.

8.1.3 Additional courses for PhD candidates

We highly recommend PhD candidates from the universities/institutes participating in or affiliated with NIHES to take one or both additional courses:

- Bayesian Statistics (CE09);
- Principles of Epidemiologic Data-analysis (EWP25).

Participation should be confirmed at the NIHES administrative office, Educational Support Center **at least 4 weeks in advance**.

8.2 Cancelling your enrolment

Graduates in the Research Master programmes (120 ECTS) need to check the General Information in Canvas for more information about enrolment after graduation.

8.3 Stay in touch!

Networking is key! Not only does NIHES like to keep track of its alumni and engage with them through our various communication channels such as LinkedIn, Facebook, YouTube and Twitter, but we also want to keep on building our esteemed network of alumni. This network also allows you the ease of staying in contact with your fellow students, other alumni and professors. It is also an invaluable network that can undoubtedly support you throughout your career. So if you have not already connected with us, we highly recommend you do!

Find us on:
LinkedIn /NIHES – Netherlands Institute for Health Sciences
Facebook /NIHESnl
YouTube /nihesnl
Twitter @NIHESnl

After your graduation, please let us know every now and then how you are doing (for example a short testimonial with your picture) – we like to applaud our alumni!

… and our best wishes for your future career!

Annex I: Contact details

NIHES administrative office

The Educational Support Centre takes care of the NIHES administration. It is situated on the second floor of the Education Centre (Fe209) of Erasmus MC. Erasmus MC and its medical faculty are located on the Hoboken campus of Erasmus University Rotterdam.

Visiting address
Educational Support Centre (DCO)
Front Desk, 2nd floor Education Centre
Wytemaweg 80,
3015 CN Rotterdam
The Netherlands
Phone: +31 (0)10 – 703 8450
Fax: +31 (0)10 – 704 4680
E-mail: nihes@erasmusmc.nl

Postal address
NIHES
Educational Support Centre (DCO)
Room Fe209
PO Box 2040
3000 CA Rotterdam
The Netherlands

Opening hours front desk NIHES: weekdays from 9.30 – 16.00 hours
2nd floor Education Centre, Room Fe209

You can contact the NIHES Administrative office by e-mail or phone or during the opening hours at the front desk. You can also make an appointment to speak to one of the programme officers. The programme coordinators are available by appointment. For contact details see below.

Address NIHES
If you want your family and friends to write to you at NIHES, they should use the following address:

[your fist name + family name]
c/o Netherlands Institute for Health Sciences
Educational Support Centre (DCO)
Room Fe209
PO Box 2040
3000 CA Rotterdam
The Netherlands

Coordinator Team Graduate School
Marian Prochazka-Venema
Available on weekdays, except Fridays
Educational Support Centre
Room: Fe209
Phone: 010 – 703 8450
E-mail: nihes@erasmusmc.nl

Programme Officers
Elena O'Neill
Available on weekdays, except Tuesday
Educational Support Centre
Room: Fe209
Phone: 010 – 704 4288
E-mail: nihes@erasmusmc.nl

Kim Verdel, MSc
Available on weekdays, except Thursday
Educational Support Centre
Room: Fe209
Phone: 010 – 704 4158
E-mail: nihes@erasmusmc.nl

Ruben van der Wolf, BA
Available on weekdays, except Friday
Educational Support Centre
Room: Fe209
Phone: 010 – 703 8450
E-mail: nihes@erasmusmc.nl

NIHES staff

The NIHES staff is situated in Erasmus MC, NA-building, 24th floor. An appointment can be made by emailing or phoning the NIHES administration (nihes@erasmusmc.nl; phone 010-703 8450)

Science Director
Vacancy

Managing Director
Koos Lubbe, MSc
Available by appointment

NIHES Coordinator
Annet Bout-Tellegen, PhD
Available by appointment on Mondays, Tuesdays and Thursdays

Mrs. Bout is coordinator of NIHES, and monitors the progress the non-medical two year Research Master students in their studies.

Administrative Support
Sanne Ruseler
Available on Mondays, Tuesdays and Thursdays

Mrs. Ruseler is administrative support/secretary of NIHES staff.

Programme Coordinators
Monique Nuijten, MSc
Available by appointment on weekdays except Fridays

Mrs. Nuijten monitors the progress the one year MSc students and DSc students in their studies, coordinates the Erasmus Mundus project ERAWEB and coordinates the Science Without Borders programme (Brazil).

Neeltje Huijing - Schrofer, MSc
Available on weekdays except Wednesdays, and Mondays in even weeks

Mrs. Huijing - Schrofer coordinates the NIHES MSc programmes regarding planning, quality assurance, assessments and related communication.

Astrid Vrakking, PhD
Available by appointment on weekdays except Fridays

Mrs Vrakking monitors the progress of the Research Master students and coordinates the Erasmus Mundus project ERAWEB.

Marketing and Communication
Bianca Knotter, MA
Available on weekdays, except Fridays in even weeks

Educational Technologist
Jaap Stelpstra
Available on weekdays

Financial Affairs
Lenie Kroon-Pelser
Available on weekdays except Wednesday

Helpdesk

Helpdesk Computer Support: icthelpdesk@erasmusmc.nl / Phone: 010 – 704 4442

Confidential counsellor

NIHES confidential counsellor
Ed van Beeck, MD PhD
Phone: 010 – 703 8471
E-mail: e.vanbeeck@erasmusmc.nl

NIHES Programme Directors

A programme director is a senior faculty member and expert in one of NIHES' core disciplines. Each has final responsibility for the content and quality of the programmes in his or her discipline. The programme directors also act as intermediaries between individual students and their tutors (and are themselves sometimes tutors). Between them, the programme directors constitute the Committee of Programme Directors, which, jointly with the two programme coordinators (see above), is charged with the selection and admission of new students, with monitoring student progress and with the awarding of degrees.

Programme Director Epidemiology
Vacancy

Programme Director Genetic Epidemiology
Cornelia van Duijn, PhD
Professor of Genetic Epidemiology
Erasmus MC
Department of Epidemiology

Programme Director Medical Psychology
Jan van Busschbach, PhD
Professor of Medical Psychology
Erasmus MC
Department of Psychiatry-section of Medical Psychology and Psychotherapy

Programme Directors Pharmaco- epidemiology
Bruno Stricker, PhD
Professor of Pharmaco- epidemiology
Erasmus MC
Department of Medical Informatics

Programme Director Economic Analysis
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Associate Professor of Biostatistics
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Clinical Research Advisory Board

The Clinical Research Advisory Board consists of the following persons:

Programme Director Research Master Clinical Research

Prof. Aart Jan van der Lely, MD, PhD
Professor of Endocrinology
Erasmus MC
Department of Endocrinology

Other members of the Clinical Research Advisory Board

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Prof. Ivo P. Touw, MD, PhD,
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Adrie J.M. Verhoeven, PhD,
Assistant professor of Internal Medicine
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Department of Internal Medicine

Annex II Definitions / descriptions

Advisor Clinical Research
The advisor Clinical Research is a member of the Clinical Research Advisory Board. The Programme Director of the Research Master programme Clinical Research assigns an advisor to a student. The advisor may also be the tutor. During part I of the programme, the advisor is the intermediate for the student, and facilitates the contacts with the different disciplines of the departments involved in the Clinical Research programme. The student and the advisor record relevant information in the Personal Education Programme (PEP). The advisor is an intermediary who discusses the training programme and openings for research with the student, proposes subjects and contact persons for research and facilitates contacts, sees to the monitoring aspect, and will lend a helping ear when problems arise.

Clinical Research Advisory Board
The Advisory Board is in charge of the organisation and coordination of the Clinical Research programme and of monitoring the study progress of the students in the Clinical Research programme. The Advisory Board has regular meetings discussing the organisation of the programme, study progress of the students, and granting certificates according to the relevant rules and regulations.

Chairpersons Health Sciences
Chairpersons Health Sciences are in charge with the organisation and coordination of the programme Health Sciences and with monitoring the study progress of the students and with granting certificates according to the relevant rules and regulations.

NIHES Coordinator
The NIHES coordinator coordinates NIHES affairs and NIHES staff.

Personal Education Plan
You will receive a Personal Educational Plan (PEP) in which you are expected to plan your personal programme. The following topics are covered: meetings with your advisor and tutor, planning elective courses and registering attended elective courses and research seminars. You may take elective courses at the different research schools and research masters in Erasmus MC, provided that the course organization and your tutor and advisor have given permission. The student is responsible for organising the meetings according to the PEP, for adding the summaries and for obtaining signatures from the advisor and tutor where necessary. Attended seminars must be registered in the PEP. The student is requested to collect proof of attendance or a signature of the lecturer of the seminar (for more information on seminars see section 2.5 ‘seminars’.

Programme Coordinator
The programme coordinator is an intermediary between students and programme directors. She monitors the progress of the students in the Master programme or Doctor of Science programme. The programme coordinator is the point of contact for questions on the programme or the research phase.

Programme Director
The programme director has final responsibility for the content and quality of the programmes in his or her discipline. The programme director can act as intermediary between a student and his or her tutor (and Advisor Clinical Research for Clinical Research students). The Programme Director, together with the programme coordinators is charged with assessing student progress and granting of certificates according to the relevant rules and regulations.

Programme Officer
The programme officers are members of Team Graduate School of the Educational Support Center (DCO) (see Annex 1 for address). A programme officer takes care of the day-to-day organization of the study programmes, courses, graduations, etc. He or she carries out these activities in close collaboration with the programme coordinators, course coordinators, lecturers and other parties involved. Students can contact the programme officers with questions relating to their study programme, courses, registration, visa, accommodation and fellowships.

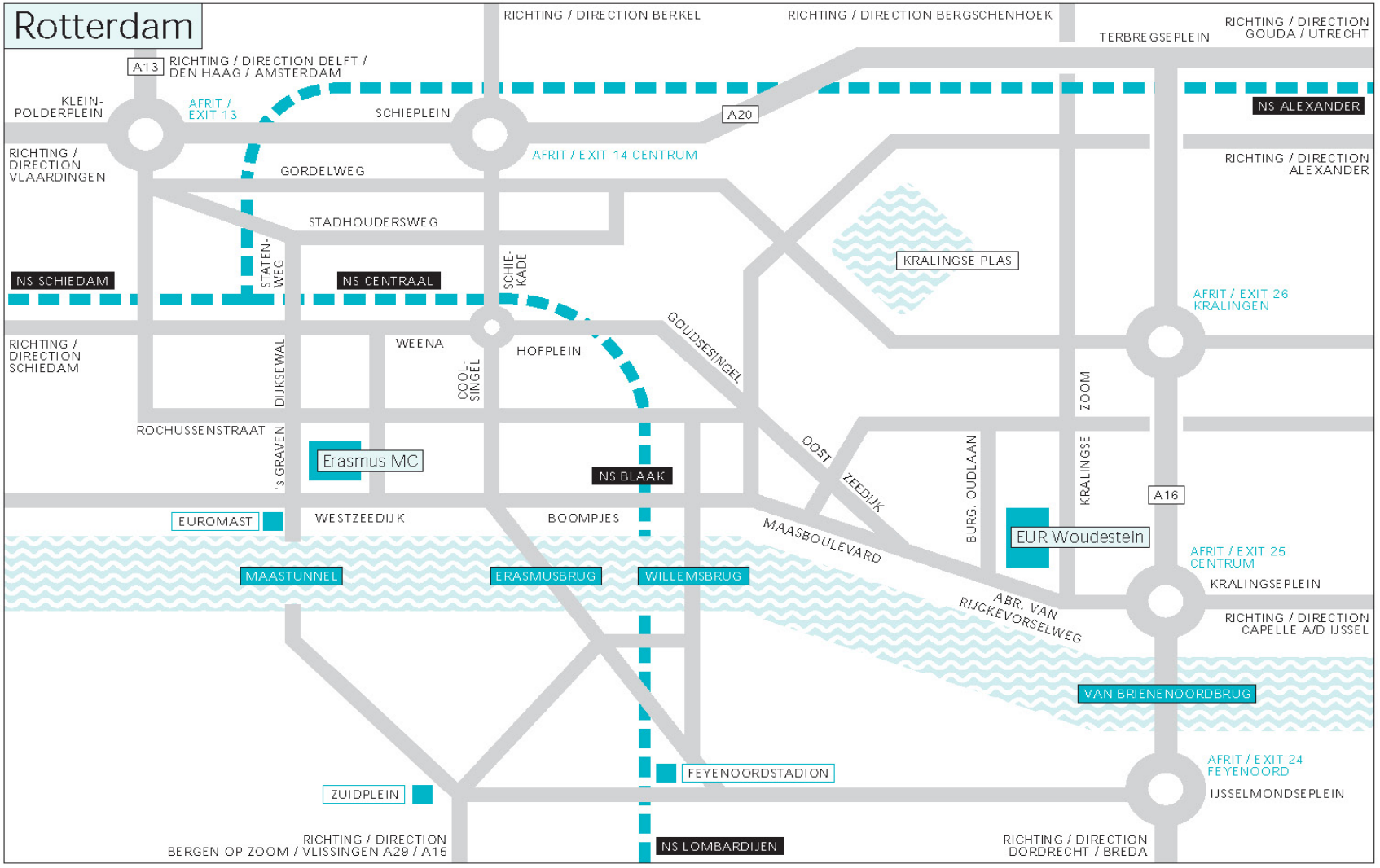
Second assessor
A faculty member at one of the NIHES’ participating institutes can be second assessor of the research paper. He or she assesses the research paper of the student independently. He or she has a doctorate degree and is experienced (senior level) in one or more specific research subjects.

Student
The student is participant in a Master programme or Doctor of Science programme.

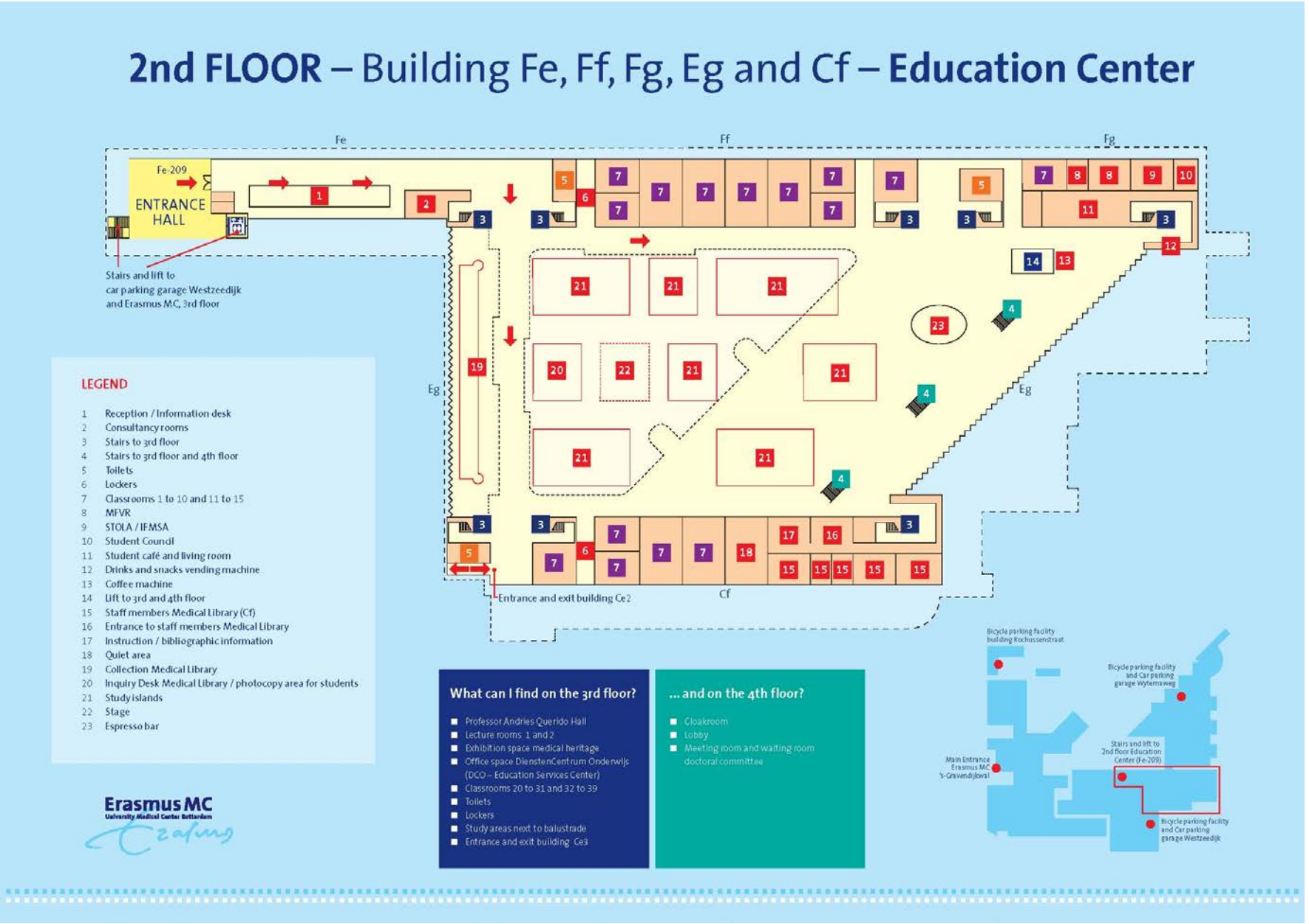
Tutor
A student’s tutor for the research phase of the programme. He or she is employed at an institute participating in one of the Research Master programmes, holds a doctorate degree and is well experienced (senior level) in one or more

specific research subjects. The tutor sees to the monitoring aspect and will lend a helping ear when problems arise during the research phase of the programme.

Annex III Maps



2nd FLOOR – Building Fe, Ff, Fg, Eg and Cf – Education Center



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Course names in alphabetical order

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Advances in Epidemiologic Analysis	ESP64	Joint Models for Longitudinal and Survival Data	ESP72
Advances in Genomics Research	ESP63	Linux for Scientists	GE14
Advances in Genome-wide Association Studies	GE03	Logistic Regression	ESP66
An Introduction to the Analysis of Next-generation Sequencing Data	GE13	Markers and Prediction Research	ESP62
Analysis of Determinants	HS02B	Maternal and Child Health	HS09
Analysis of Population Health	HS02A	Medical Demography	HS04
Bayesian Statistics	CE09	Mendelian Randomization	GE10
Biostatistical Methods I: Basic Principles	CC02	Methodological Topics in Epidemiology Research	EP02
Biostatistical Methods I: Basic Principles, part A	CC02A	Methods of Clinical Research	ESP10
Biostatistical Methods II: Classical Regression Models	EP03	Methods of Health Services Research	ESP42
Cancer Epidemiology	EP13	Methods of Public Health Research	ESP11
Case-control Studies	ESP40	Missing Values in Clinical Research	EP16
Causal Inference	ESP48	Pharmaco-epidemiology	ESP21
Causal Mediation Analysis	ESP69	Pharmaco-epidemiology and Drug Safety	EWP03
Clinical Epidemiology	CE02	Planning and Evaluation of Screening	HS05
Clinical Practice-relevant Therapeutic Trials	ESP73	Preventing Failed Interventions in Behavioural Research	MP05
Clinical Trials	ESP14	Principles of Epidemiologic Data Analysis	EWP25
Cohort Studies	ESP39	Principles of Genetic Epidemiology	ESP43
Conceptual Foundation of Epidemiologic Study Design	ESP38	Principles of Identifying and Recognizing Adverse Events and Safety Signals	D4M1
Courses for the Quantitative Researcher	SC17	Principles of Research in Medicine and Epidemiology	ESP01
Diagnostic Research	EWP05	Primary and Secondary Prevention Research	ESP45
English Language	SC01	Psychology in Medicine	MP01
Epidemiology of Infectious Diseases	CE05	Psychopharmacology	MP03
Epigenetics	ESP75	Public Health in Low and Middle Income Countries	PU06
From Problem to Solution in Public Health	HS18	Psychiatric Epidemiology	EP12
Family Based Genetic Analysis	GE05	Quality of Life Measurement	HS11
Fundamentals of Medical Decision Making	ESP70	Regression Analysis	ESP09
Genetic-epidemiologic Research Methods	GE02	Repeated Measurements	CE08
Genome Wide Association Studies	ESP74	Scientific Writing in English for Publication	SC07
Genomics in Molecular Medicine	ESP57	Site Visit to the Municipal Health Service Rotterdam	PU03
Health Economics	ESP25	SNPs and Human Diseases	GE08
Health Services: Research and Practice	HS15	Social Epidemiology	ESP61
History of Epidemiologic Ideas	ESP53	Study Design	CC01
Identifying Susceptibility for Adverse Drug Reactions	D4M3	Substantiation and Quantification of Risks	D4M2
Integration module	PU04	Survival Analysis	ESP28
International Comparison of Health Care Systems	HS03a	Survival Analysis for Clinicians	EWP24
Intervention Development and Evaluation	HS02c	The Practice of Epidemiologic Analysis	ESP65
Introduction to Bayesian Methods in Clinical Research	ESP68	Topics in Meta-analysis	ESP15
Introduction to Benefit-Risk Assessment and Pharmacoeconomics in Decision Making	D5M1	Women's Health	EP19

For up-to-date course descriptions please go to http://www.nihes.com

CC01: Study Design

Scheduled: From 29 Aug - 16 Sep 2016
Faculty: *Abbas Dehghan, PhD, Taulant Muka, PhD, Prof. Miriam Sturkenboom, PhD and others*
ECTS: 4.3
Prerequisites: None

In this course, the principles and practice of follow-up and case-control studies will be taught. The theory underlying the different design options will be discussed in depth. The course focuses on the classical approach but also addresses modern concepts. The practice of conducting follow-up and case-control studies with emphasis on issues of validity will be discussed. Lectures will be complemented by exercises using current examples of epidemiological studies.
Participants will be asked to work out a study design and prepare a formal presentation on the last course day.

Objectives:

- Understanding of main concepts of design of follow-up and case-control studies;
- Ability to design a follow-up or case-control study given a research question;
- Ability to discuss research papers with respect to aspects of validity.

CC02: Biostatistical Methods I: Basic Principles

Scheduled: From 19 Sep - 14 Oct 2016
Faculty: *Prof. H. Boersma, Ir. PhD, I. Kardys, MD, PhD and others*
ECTS: 5.7

The analysis of collected data is an inevitable part of almost any medical research project. Consequently, knowledge of and insight in the basic principles of data-analysis are essential for medical researchers. The course CC02 - Biostatistical Methods I: basic principles is designed to teach classical and basic statistical techniques for the analysis of medical research data. The course comprises lectures as well as computer practicals, in which students will apply the widely used statistical software package SPSS to work through exercises.

CC02 consists of two parts. In part A, which lasts one week, basic applications of biostatistics will be introduced, including descriptive statistics, general principles of statistical hypothesis testing, statistical inferences on means and proportions, and interval estimates for association measures. In part B, which last two weeks, more advanced methods will be discussed, including linear correlation and regression, multiple linear regression, analysis of covariance, regression diagnostics, stratified analysis and time-to-event analysis. The logistic regression model and the Cox proportional hazard regression model will be introduced briefly.

During the lectures, time will be spent on practical examples and exercises. SPSS will be introduced in the first week. Throughout the course, examples of SPSS-programmes and -output will be demonstrated in relation to the several topics that will be discussed.

Biostatistical Methods I: Basic Principles, part A (CC02A) is equivalent to Introduction to Data-analysis (ESP03) and Biostatistics for Clinicians (EWP22).

Objectives:

- Understanding and using basic applications of biostatistics in the analysis of medical research data.

CC02A: Biostatistical Methods I: Basic Principles Part A

Scheduled: Spring 2017
Faculty: *Prof. H. Boersma, Ir. PhD, I. Kardys, MD PhD and others*
ECTS: 2

The analysis of collected data is an inevitable part of almost any medical research project. Consequently, knowledge of and insight in the basic principles of data-analysis are essential for medical researchers. The course CC02 - Biostatistical Methods I: Basic Principles is designed to teach classical and basic statistical techniques for the analysis of medical research data. The course comprises lectures as well as computer practicals, in which students will apply the widely used statistical software package SPSS to work through exercises.

In CC02 part A, which lasts one week, basic applications of biostatistics will be introduced, including descriptive statistics, general principles of statistical hypothesis testing, statistical inferences on means and proportions, and interval estimates for association measures.

During the lectures, time will be spent on practical examples and exercises. SPSS will be introduced. Throughout the course, examples of SPSS-programs and -output will be demonstrated in relation to the several topics that will be discussed.

The courses Introduction to Data-analysis (ESP03) and Biostatistics for Clinicians (EWP22) are equivalent to Biostatistical Methods I: basic principles, part A (CC02A).

Objectives:

- Understanding and using basic applications of biostatistics in the analysis of medical research data, like descriptive statistics, general principles of statistical hypothesis testing, statistical inferences on means and proportions, and interval estimates for association measures.

CE02: Clinical Epidemiology

Scheduled: From 17 Oct - 11 Nov 2016
Faculty: *Prof. M. Hunink, MD PhD, Prof. O. H. Franco, MD PhD, Prof. E. Steyerberg, PhD, L. Visser, PhD, MB PhD, A. Ikram, MD PhD,*
ECTS: 5.7

In clinical epidemiology, research is focused on questions of diagnosis, prognosis and etiology. To address these questions, several research options are available, including intervention trials and case-control studies using data obtained in a clinical setting. In addition, combined with decision analysis, results from clinical epidemiologic research may be used in treatment decision.

In the course, the principles and practice of clinical epidemiology will be considered and examples from the literature will be worked out and discussed. The aim is to provide the participants with the knowledge to evaluate and judge applied clinical research and data analysis and give a sufficient scientific and methodologic background to actively participate in clinical studies.

Topics are: principles of applied clinical research, diagnostic reasoning, diagnostic and prognostic research, comparative (clinical) experimental study, comparative non experimental study, meta-analysis and evidence based medicine.

Objectives:
- Ability to evaluate and judge applied clinical research and data analysis;
- Ability to actively participate in clinical studies.

CE05: Epidemiology of Infectious Diseases

Scheduled: Winter/Spring 2017
Faculty: *M. Schim van der Loeff, MD PhD, Staff of Public Health Service Amsterdam, National Institute for Public Health Bilthoven and invited speakers.*
Prerequisites: Introductory level epidemiology
ECTS: 1.4

Quantitative approaches play an important role in the understanding of the spread of infectious diseases and provide important tools for prevention. During the course, the basic notions that describe the mechanisms behind the spread of a disease will be introduced. Several examples of what can be learned from the use of quantitative models will be given. The relation between the specific characteristics of some infectious diseases and their spread will be exemplified, e.g. for tuberculosis, hepatitis, rubella, AIDS. Only a basic level of mathematics is needed, and exercises will be given to practice the theoretical concepts.

Topics covered:
1) Important concepts and tools in modelling the spread of infectious disease.
2) Some important quantities related to the spread of infectious diseases (incidence, prevalence, cumulative incidence, incubation time); estimation of these quantities, with an example from the HIV epidemic.
3) Simulating large scale and small scale epidemics using the computer.
4) Basic reproductive number (R0) as central determinant of whether an epidemic develops.
5) Mode of transmission (e.g. airborne, sexual) in relation to the characteristics of spread.
6) Heterogeneous spread; the role of mixing between subgroups; contact patterns.
7) Molecular epidemiology as a new tool to monitor and model the spread of an infectious disease.

Prevention programmes.

1) Vaccination strategies in relation to characteristics of the infectious disease.
2) Cost-effectiveness analyses of prevention and treatment.
3) Screening of pooled blood samples.

Objectives:

- Understanding the basic mechanisms of the spread of infectious diseases;
- Acquire knowledge of the important concepts and tools in modelling spread of infectious diseases;
- Understanding how infectious disease models can provide important tools for prevention.

CE08: Repeated Measurements in Clinical Studies

Scheduled: Winter/Spring 2017
Faculty: *D. Rizopoulos, PhD*
Prerequisites: Courses for the Quantitative Researcher (EP17) or equivalent knowledge. Familiarity with standard regression models such as the multiple linear regression and logistic regression model. No previous experience of repeated measurements analysis is required.
ECTS: 1.4

The course covers statistical methods to be used where one or more variables are repeatedly measured in time on the same experimental unit. For instance, in a clinical trial, the outcome variable can be measured at baseline and at different times during the treatment period. In a meta-analysis, the study can be regarded as the experimental unit and the observations of patients within the same study as repeated measurements.
In the last 10 or 15 years much progress has been made in the development of new methods of analysis. In recent years several of these new methods have been implemented in commercially available computer packages. First an overview of classical approaches to repeated measurements will be given, and, since all modern methods are likelihood based, a review of likelihood theory is given. Then modern methods are introduced. For approximately normally distributed response, focus will be on the General Linear Mixed Model. For non-normal response, the generalized estimating equations (GEE) approach for marginal models is discussed. Attention is also paid to random effects models, for instance random effects logistic regression. Examples of clinical and epidemiological applications will be given. In four computer practical's, the procedures Proc Mixed, Proc Genmod and Proc Nlmixed of the SAS statistical package are used to acquire hands on experience in applying these techniques to real data.

Objectives:

- Ability to use statistical methods where one or more variables are repeatedly measured in time on the same experimental unit.

CE09: Bayesian Statistics

Scheduled: Winter/Spring 2017
Faculty: *Prof. E. Lesaffre, PhD*
Prerequisites: Biostatistical Methods I: Basic Principles (CC02), Biostatistical Methods II: Classical Regression Models (EP03) and Courses for the Quantitative Researcher (SC17) or equivalent knowledge. Intermediate level epidemiology and statistics. Repeated Measurements (CE08) and Missing Values in Clinical Research (EP16) are strongly recommended.
ECTS: 1.4

There is growing acknowledgement of the value of Bayesian methods for complex models in biostatistics and epidemiology, in dealing with issues such as multiplicity, measurement error, spatial associations and hierarchical structure. This course will introduce the essentials of Bayesian ideas, emphasizing practical application using exact and simulation-based software. Examples will include the use of Bayesian methods in clinical trials, institutional comparisons, smoothing of disease rates, and frailty models.

Objectives:

- Introduce Bayesian concepts and contrast them with the frequentist approach;
- Understand the background and the importance of computer intensive methods in Bayesian statistical analyses, such as the Markov Chain Monte Carlo (MCMC) techniques: Gibbs and Metropolis-Hastings sampling;
- Be able to work with some Bayesian software, such as WinBUGS, 1stBayes, etc.;
- Understand the applications and developments in the epidemiological literature involving Bayesian approaches.

Keywords:

- Bayesian analysis, Gibbs sampling, MCMC

D4M1: Principles of Identifying and Recognizing Adverse Events and Safety Signals

Scheduled: Oct - Dec 2016
ECTS: 3

For up-to-date course information please check:
http://www.eu2p.org/course-catalogue/medicines-risk-identification-and-quantification/principles-of-identifying-and-recognizing-adverse-events-and-safety-signals

D4M2: Substantiation and Quantification of Risks

Scheduled: Jan - Jun 2017
ECTS: 6

For up-to-date course information please check:
http://www.eu2p.org/course-catalogue/medicines-risk-identification-and-quantification/substantiation-and-quantification-of-risks

D4M3: Identifying Susceptibility for Adverse Drug Reactions

Scheduled: Apr - Jun 2017
ECTS: 3

For up-to-date course information please check:
http://www.eu2p.org/course-catalogue/medicines-risk-identification-and-quantification/identifying-susceptibility-for-adverse-drug-reactions

D5M1: Introduction to Benefit-Risk Assessment and Pharmacoeconomics in Decision Making

Scheduled: Oct - Dec 2016
ECTS: 3

For up-to-date course information please check:
http://www.eu2p.org/course-catalogue/medicines-benefit-risk-assessment/introduction-to-benefit-risk-assessment-and-pharmacoeconomics-communication-in-decision-making

EP02: Methodologic Topics in Epidemiologic Research

Scheduled: 14- 18 Nov 2016
Faculty: *Sonja Swanson, PhD and vacancy*
Prerequisites: Study Design (CC01)
ECTS: 1.4

This course elaborates upon major concepts in epidemiologic research with a short review on their historic development. The course will begin with addressing the development of epidemiologic thinking about causation and causal inference in epidemiologic studies. The course further focuses on methods to investigate confounding and effect-modification. Finally, it will address the consequences of misclassification bias in epidemiologic studies. The course is based on short lectures followed by small group and plenary discussions where participants are actively involved in discussing major papers in the field as well as exercises with their peers.

Objectives:

- Gain insight in the historic development of major concepts in epidemiologic research.

EP03: Biostatistical Methods II: Classical Regression Models

Scheduled: 21 Nov - 9 Dec 2016
Faculty: *D. Rizopoulos. PhD, S. Willemsen, PhD*
Prerequisites: Biostatistical Methods I: Basic Principles (CC02)
ECTS: 4.3

The aim of this course is to introduce several important statistical regression models for non-normal and censored outcomes that are widely applied in clinical and epidemiological research. The course starts with a brief

presentation of the basic principles behind likelihood theory, followed by a detailed discussion of logistic regression for dichotomous data, Poisson regression for count data, and closes with an extended presentation of regression models for time-to-event data, including the Cox proportional hazards model and the accelerated failure time model.
The course will be explanatory rather than mathematically rigorous, with emphasis given on application such that participants will obtain a clear view on the different modeling approaches, and how they should be used in practice. To this end, the course includes several computer sessions during which participants will be asked to implement in practice the methods discussed in the theory sessions.

Objectives:
- ability to identify which type of regression models should be utilized depending on the nature of the data at hand and the actual research questions to be answered, and which model-building strategies should be followed in each setting;
- ability to construct and fit an appropriate regression model, correctly interpret the obtained results, and extract additional useful information (e.g., plots) that can help communicate the results of the analysis.

EP12: Psychiatric Epidemiology

Scheduled: Spring 2017
Faculty: *Prof. H. Tiemeier, MD PhD, Prof. F. Verhulst, MD PhD, and invited speakers.*
Prerequisites: Some knowledge of basic epidemiological issues.
ECTS: 1.1

This four-day course focuses on the principles and practice of psychiatric epidemiology. Basic concepts and issues that are specific to both child and adult psychiatric epidemiology are covered. Psychiatric issues that will be used to illustrate concepts and practice of psychiatric epidemiology include: prevalence studies, longitudinal studies, the role of risk and resilience, and genetic epidemiology. Invited speakers will cover particular topics such as migration and psychiatric disorder, the epidemiology of bipolar disorder, schizophrenia and addiction in more detail.

Objectives:
- Understanding the basic concepts of psychiatric epidemiology;
- Ability to evaluate and judge applied psychiatric research.

EP13: Cancer Epidemiology

Scheduled: Winter/Spring 2018
Faculty: *Prof. F. van Leeuwen, Ir. PhD, and invited speakers*
Prerequisites: Intermediate level epidemiology
ECTS: 1.4

Cancer is a major cause of morbidity and mortality in the developed world. The aim of this 5-day course is to provide an overview of the contributions of exogenous and endogenous factors to the risk of various cancers.

The course starts with descriptive cancer epidemiology and an overview of current concepts of cancer development at the molecular and cell level. Subsequently, genetic and non-genetic risk factors for the most important cancers will be extensively discussed, as well as gene-environment interactions. Special attention will be given to risk factors for multiple primary cancers and recent results of chemo prevention studies. Although the emphasis of the course will be on etiologic factors, one session will specifically address time trends in cancer incidence, mortality and survival rates, followed by a discussion on whether or not we are winning the battle against cancer.

Objectives:
- Gain insight in the contributions of exogenous and endogenous, genetic and non-genetic factors to the risk of various cancers, and gene-environment interactions;
- Acquire knowledge on descriptive cancer epidemiology and current concepts of cancer development at the molecular and cell level.

EP16: Missing values in Clinical Research

Scheduled: Winter/Spring 2017
Faculty: *Prof. H. Thijs, PhD and Prof. G. Molenberghs, PhD*
Prerequisites: Biostatistical Methods II (EP03), Courses for the Quantitative Researcher (SC17) and Repeated Measurements in Clinical Studies (CE08) or equivalent knowledge
ECTS: 0.7

Missing data frequently occur in clinical trials. An important cause for missing data is patients who leave the study prematurely, so-called dropouts. Alternatively, intermittent missing data might occur as well.

It becomes hard to comply with the intention-to-treat (ITT) principle, when patients are evaluated only once under treatment. However, when enough repeated measurements are taken the information of the dropouts might still be used. One can use of the observed portion of the data to retrieve information on dropouts. In general commonly used methods to analyse incomplete longitudinal clinical trial data include complete-case (CC) analysis and an analysis using the last observation carried forward (LOCF). However, these methods are based on strong and unverifiable assumptions about the dropout mechanism. Over the last decades, a number of longitudinal data analysis methods have been suggested, providing a valid estimate for, e.g., the treatment effect under less restrictive assumptions.

The assumptions regarding the dropout mechanism have been classified by Rubin and co-workers as: missing completely at random (MCAR), missing at random (MAR) and missing not at random (MNAR). We will review various repeated measurements models and indicate under which missing data mechanism they will provide valid estimates of the treatment effect. Finally, since it is impossible to verify that the dropout mechanism is MAR we argue that, to evaluate the robustness of the conclusion, a sensitivity analysis thereby varying the assumption on the dropout mechanism should become a standard procedure when analyzing the results of a clinical trial.

Objectives:

- Gain insight in various repeated measurements models and under which missing data mechanism they will provide valid estimates of the treatment effect.

EP19: Women's Health

Scheduled: Winter/Spring 2017
Faculty: *M. Kavousi, MD PhD, J. Roeters van Lennep, MD PhD, Prof. O. H. Franco, MD PhD, H. Duvekot MD PhD*
ECTS: 0.9

Department of Epidemiology, in collaboration with the department of Internal Medicine, Erasmus University medical Center, offers medical and health professionals a fully articulated course in Women's Health. The course offers participants a complementary, interdisciplinary understanding of the health and disease in women and their implications for medical research, policy making, and health care.

This course is designed for motivated gynaecologists, internists, oncologists, neurologists, psychologists, epidemiologists, nutritionists, public health scientists, general practitioners, and nurses wishing to expand their knowledge and become leaders in women's health.

Objectives:

- Develop an understanding of the multiple determinants of women's health;
- Promote knowledge on women's health in the primary and secondary health care settings thus improving health and wellness of women in the community.

ESP01: Principles of Research in Medicine and Epidemiology

Scheduled: 8 - 12 Aug 2016
Faculty: *Prof. A. Hofman, MD PhD*
ECTS: 0.7

This course will provide an orientation to medical research from a quantitative and epidemiological viewpoint. The course will give an introduction to the design of clinical and public health research, and it will discuss measures of disease frequency and association, and the validity of research in medicine. It will give an overview of elements of data-analysis.

Objectives:

- Understanding the design and data-analysis of clinical and public health research;
- Gain insight in measures of disease frequency and association, and the validity of research in medicine.

ESP03: Introduction to Data-analysis

Scheduled: 8- 12 Aug 2016
Faculty: *Prof. A. Albert, PhD*
Prerequisites: No prior experience with statistical programs or computers is required
ECTS: 1.0

This course is a general introduction to the basics of statistics used in biomedical and public health applications. We start with a general definition of statistics and give some examples. We then review the notions of population, sample, variables (qualitative and quantitative) and data (missing, outlying, and censored). Next, the course will focus on modern ways to describe data such as tables, graphs, distributions and summary statistics (mean, standard deviation, median, quartiles), as required in the international scientific literature. The analysis of survival data will also be envisaged, in particular the renowned Kaplan-Meier survival curve. Finally, the association between variables will be discussed (correlation, relative risk, odds ratio and regression) as well as the agreement between observers (Cohen kappa coefficient).

The course will then turn on the relation between the population and the random sample and on how effects observed in the sample can be generalized to the total population. Some elementary probability elements will be needed here. This will lead to the important concepts of standard error and confidence intervals (for means, proportions, odds ratios). The general theory of hypothesis testing will be briefly outlined from an intuitive perspective and the fundamental concepts of statistical significance, power calculation and p-value will be introduced.

Then, we shall review the most frequently used testing procedures: correlation test, unpaired and paired t-tests for comparing two means values, analysis of variance for comparing several means (with multiple tests correction), chi-squared test (and Fisher exact test) for comparing two proportions and more generally for contingency tables, McNemar test for paired proportions, and two-way analysis of variance for repeated data. The logistic model and Cox model will be briefly alluded to because of their importance in the international medical literature. The basic principles underlying non parametric tests will be outlined and the most used distribution-free tests mentioned (Spearman correlation, Wilcoxon signed rank test, Mann-Whitney U-test, Kruskal-Wallis and Friedman tests).

All topics covered in the course will be illustrated using real data from the medical and biomedical literature and applied during practical sessions.

Objectives:

- to have a clear understanding of what statistics is all about in medicine and public health, and to be acquainted with the most commonly statistical methods in the biomedical literature;
- to be able to assess when and how to apply these methods in real-life situations;
- to improve skills in data presentation, interpretation and communication;
- to perceive the importance of data analysis with respect to experimental planning, data collection, data reporting and data interpretation.

ESP09: Regression Analysis

Scheduled: 15 -19 Aug 2016
Faculty: *Prof. B. Marx, PhD*
Prerequisites: Introduction to Data-analysis (ESP03), Biostatistics for Clinicians (EWP22) or equivalent knowledge
ECTS: 1.9

This intermediate level course aims at providing theoretical and practical training for epidemiologists, clinicians and other professionals of related health disciplines in statistical modelling with particular emphasis on straight line linear, and multiple regression. Included topics are: review of straight line regression and correlation, ANOVA for straight line regression, appropriateness of straight line model, polynomial regression, multiple regression analysis, partial F-test, dummy/indicator variables, statistical interaction, comparing straight line regressions, analysis of covariance, estimation and interpretation, goodness-of-fit, model selection, collinearity and outlier diagnostics.

Objectives:

- Students will learn the fundamental methods of statistical regression modeling for continuous response variables;
- Students will learn how to build and interpret a variety of multiple regression models, including models with continuous, nominal/indicator, and polynomial explanatory regressor variables;
- Students will become familiar with outlier and collinearity diagnostics to refine models, as well as statistical software packages for computing multiple regression models.

ESP10: Methods of Clinical Research

Scheduled: 15 - 19 Aug 2016
Faculty: *Prof. H. Tiemeier, MD PhD*
Prerequisites: Principles of Research in Medicine and Epidemiology (ESP01), or equivalent knowledge.
ECTS: 0.7

This course will give an introduction to clinical epidemiology. Due to its focus on the appropriate research design, measurement and evaluation, clinical epidemiology provides the scientific basis for the practice of medicine. The topics that will be covered in this course include risk (determinants of disease, pathogenesis), diagnosis (evaluation of diagnostic tests), prognosis (prediction of disease outcome), and management of disease (evaluation of therapy efficacy and safety). The course takes both a theoretical and a problem-oriented approach.

Objectives:

- to gain understanding of the designs and analyses of clinical studies;
- to be able to plan, formulate, and implement clinical research;
- to be able to evaluate aetiological, diagnostic and prognostic research;
- to know the challenges and fallacies in modern clinical research.

ESP11: Methods of Public Health Research

Scheduled: 15 - 19 Aug 2016
Faculty: *Prof. A. Burdorf, Ir. PhD*
Prerequisites: Principles of Research in Medicine and Epidemiology (ESP01), or equivalent knowledge.
ECTS: 0.7

This course aims to provide an introduction to the study designs and analytic methods available to public health researchers to describe the influence of important determinants on public health and to evaluate effects of primary preventive intervention on public health. This course focuses on population health rather than individual health and explains why different designs and methods are required. The course targets three key issues: (1) summary measures of population health, such as standardised morbidity rates and life expectancy, (2) measures of association and relative importance of specific causes for population health, and (3) evaluation of population interventions through community trials and alternative designs based on natural experiments. Designs and methods will be illustrated in lectures and exercises and application will be discussed in hot topics, such as health inequalities; causes and consequences of ageing; avoidable diseases such as cancer; and exposure assessment in environmental epidemiology.
The course will be relevant to those who have a basic knowledge of epidemiology, and who wish to start a career in public health research.

Objectives:

- understand key research designs and analytic methods in Public Health Research;
- Understand background, causes, and consequences of key issues in population health.

ESP14: Clinical Trials

Scheduled: 8 – 12 Aug 2016
Faculty: *M. Zwahlen, S. Trelle*
Prerequisites: Principles of Research in Medicine and Epidemiology (ESP01) and Introduction to Data-analysis (ESP03), or equivalent knowledge.
ECTS: 0.7

This intermediate level course provides insights to the primary design, conduct and analysis issues that must be considered by the many disciplines that collaborate on a clinical trial.

We consider the clinical, scientific, and regulatory setting of clinical trials, describing the phased approach to “treatment discovery” in which the safety, efficacy, and effectiveness of candidate treatments are investigated. Issues regarding design that will be discussed surround disease area, identification of the target population, definition of the treatment, choice of clinical outcomes, and choice of comparators. Topics regarding the conduct and implementation of clinical trials focus on choice of randomization strategies, blinding, specification of secondary endpoints, handling of missing data, conduct and monitoring of the study, the role of an independent

data monitoring committee, and plans for reporting of the result. Throughout the course emphasis is placed on pre-specification of these elements in a well-defined study protocol.

Objectives:
After this course you should be able to
• Critique the design, conduct and analysis of a randomized clinical trial;
• Design the fundamental characteristics of a clinical trial to address an important scientific problem;
• Understand the challenges related to selected topics regarding the conduct and implementation of a clinical trial.

ESP15: Topics in Meta-analysis

Scheduled: 8 - 12 Aug 2016
Faculty: *Prof. M. Egger, PhD*
Prerequisites: Introductory level background in epidemiology and biostatistics.
ECTS: 0.7

Programme
Introductory lecture: Why do we need systematic reviews and meta-analyses?
Lecture / pen and paper practical: Measures of association
Lecture: Basic statistical methods

Computer practical Basic meta-analysis in Stata
Lecture / demonstration: Identifying relevant studies
Practical: Identifying relevant studies in PubMed

Lecture Assessing quality and risk of bias
Lecture The scope of meta-analysis: Meta-analysis of observational studies
Case study / group work: How good is this meta-analysis?
Case study / group presentations How good is this meta-analysis?
Lecture Explaining heterogeneity and detecting bias
Lecture / case study Individual participant data (IPD) meta-analysis

Lecture Meta-analysis of dose-response relationships in epidemiology
Computer practical Advanced meta-analysis in Stata I & II

Students need a calculator with LOG function.

ESP21: Pharmaco-epidemiology

Scheduled: 8 - 12 Aug 2016
Faculty: *Prof. B. Stricker, PhD*
Prerequisites: Principles of Research in Medicine and Epidemiology (ESP01) and Methods of Clinical Research (ESP10) or equivalent knowledge.
ECTS: 0.7

Pharmaco-epidemiology pertains to the study of the use and of the effects of drugs. It links clinical pharmacology and epidemiology. This course provides, at an intermediate level, the theoretical basis for studying the intended effects as well as the adverse effects of drugs used in humans. The course will mainly focus on drug research after marketing, including post marketing surveillance and drug risk assessment.

This course is intended for those who already followed introductory courses in study design, data-analysis and principles of research in medicine.

Objectives:
- to know more about study designs in pharmaco-epidemiology;
- to know how to address exposure as a determinant;
- to know more about drug-specific bias and confounding.

ESP25: Health Economics

Scheduled: 22 - 26 Aug 2016
Faculty: *K. Redekop, PhD*
Prerequisites: Introduction to Health Services Research (ESP42)
ECTS: 0.7

Economic thinking is becoming increasingly important in health care. This course begins with a two-day introduction of main concepts of health economics. The remaining three days are used to provide students with more in depth knowledge. The student will learn to analyze the cost-effectiveness of health care interventions (e.g., medicine, diagnostic test, health care programme). Both methodology and practical examples will be covered. Exercises are used to illustrate the various steps in economic thinking.

Objectives:

By the end of this course participants:

- will understand basic principles of health economics and their application at various levels (including country-level and hospital-level policymaking and single technology assessments);
- will be able to describe the aims and steps of a cost-effectiveness analysis, as well as the role of related activities such as computer modelling, cost analysis, and quality of life assessment;
- will be able to perform some basic level cost-effectiveness analyses through computer exercises.

ESP28: Survival Analysis

Scheduled: 15 - 19 Aug 2016
Faculty: *Prof. H. Putter, PhD*
Prerequisites: Knowledge of statistics. Knowledge of regression models is advised.
ECTS: 1.9

Survival analysis is the study of the distribution of life times, i.e. the times from an initiating event (birth, diagnosis, start of treatment) to some terminal event (relapse, death). Survival analysis is most prominently (but not only) used in the biomedical sciences. A special feature of survival data is that it takes time to observe the event of interest. A result of this seemingly innocent observation is that for a number of subjects the event is not observed, but instead it is known that it has not taken place yet. This phenomenon is called censoring and it requires special statistical methods. During the course different types of censored and truncated data will be introduced and techniques for estimating the survival function by employing both parametric and non-parametric methods will be illustrated. Also techniques for testing equality of survival functions (the log-rank test and alternatives) are discussed. Finally regression models for survival analysis, based on the hazard function (most notably the Cox proportional hazards model), will be studied in great detail. Special aspects such as time-dependent covariates and stratification will be introduced. Techniques to be used to assess the validity of the proportional hazards regression model will be discussed. The last part of the course touches on models for multivariate survival analysis, including competing risks and multi-state models and frailty models. Finally, aspects of the planning of clinical trials with lifetime data will be discussed.

Objectives:
After completing the course, the student should:

- Understand the concept of censoring and its implications for statistical analysis;
- Be familiar with the most important techniques in survival analysis, such as the Kaplan-Meier estimate, the log-rank test and proportional hazards regression;
- Understand the underlying assumptions and limitations of these techniques;
- Be able to perform statistical analysis of time-to-event data and interpret the results.

ESP38: Conceptual Foundation of Epidemiologic Study Design

Scheduled: 8 - 12 Aug 2016
Faculty: *Prof. K. Rothman*
ECTS: 0.7

This course elaborates the fundamental principles of epidemiologic study design. It begins with an introduction to the basic principles of epidemiologic inference, including concepts of causation, causal inference and the measurement of disease occurrence and causal effects. With this foundation, attention shifts to the principles of study design and discussion of the major types of epidemiologic study, primarily cohort and case-control studies. The utility and consequences of matching in subject selection is also addressed. The course concludes with a presentation of the underlying principles of epidemiologic data analysis.

Objectives:

- being conversant with the concepts of causation and causal inference in epidemiology, as well as the basic epidemiologic measures, especially risk and rate measures, and effect measures based on them;
- understanding of and ability to explain the conceptual similarities and differences between cohort and case-control studies;
- ability to define and describe confounding and discuss the primary ways in which it can be controlled, and articulate why matching of subjects may be inadequate as a means to prevent confounding.

ESP39: Cohort Studies

Scheduled: 15 - 19 Aug 2016
Faculty: *J. Samet*
Prerequisites: Introductory level epidemiology course work and introductory level biostatistics.
ECTS: 0.7

This course will provide an introduction to the cohort and other longitudenal designs for students with an intermediate level background in epidemiology.
It will focus on design and interpretation, emphasizing the principles and complexities of data collection over time and potential biases that may affect cohort data. Topics to be covered include cohort definition, follow-up and definition of outcomes, fixed and time-dependent exposures, quality control, mixed study designs (nested case-cohort studies), and quality assurance and control. The course will also cover the use of the cohort design in clinical/translational research.
The course will also cover the basic analytic methods appropriate to various types of cohort data, including the application of both non-parametric methods and regression models. The course will be based on lectures as well as in small group and plenary discussions of exercises. Competencies to be gained in the course include the ability to interpret findings from cohort studies and to apply principles for the design of cohort studies. 15 hrs.

Objectives:

- To be able to recognize the general design of a cohort study;
- To identify salient issues in the conduct and implementation of cohort studies;
- To recognize the main techniques for the analysis and issues in the interpretation of cohort data.

ESP40: Case-control Studies

Scheduled: 15 - 19 Aug 2016
Faculty: *Prof. M. Szklo, MD PhD*
Prerequisites: Introductory level epidemiology course work and introductory level biostatistics.
ECTS: 0.7

The course will provide an introduction to the design and analysis of case-control studies. Topics to be covered include case-based case-control, nested case-control and case-cohort designs, selection of cases and controls, the parameter measured by the odds ratio as a function of control selection, matched and unmatched strategies, common biases, and evaluation of additive and multiplicative interaction in case-control studies. These topics will be discussed in the context of the case-control design as a special way to analyze cohort data. In addition, a discussion of adjustment approaches appropriate to case-control data will be covered, including stratified and regression methods. The course will be based on classroom lectures and small group discussions of simulation exercises.

Objectives:

- to understand the main case-control study designs and he importance of the type of control group to the parameter estimated by the exposure odds ratio;
- to recognize the main problems when drawing inferences from results of case-control studies;
- to learn and apply the main techniques of confounding adjustment and assessment of interactions in case-control studies.

ESP41: Introduction to Global Public Health

Scheduled: 8 - 12 Aug 2015
Faculty: *R. Chowdhury*
ECTS: 0.7

The overall strengths and weaknesses of epidemiology and public health will be discussed and the important health effects of globalisation analysed. The main outcome of the course will be a better understanding of how epidemiology and public health can more effectively protect the health of disadvantaged populations in the changing global context. The specific health issues to be discussed include: the tobacco pandemic and the rise of the obesity epidemic; strategies for non-communicable disease (NCD) prevention and control; threats to health from communicable diseases such as HIV/AIDS and ebola; and the impact of global environmental change. Other examples of topical interest will be discussed as appropriate.
For each health problem there will be a discussion of: burden of disease, major determinants, intervention policies and programmes, and evaluation of the effectiveness of the interventions. A focus of the course is small group interaction.

Objectives:

- a greater awareness of the full range of global public health challenges;
- increased understanding of the strengths and weaknesses of epidemiology and public health in responding to these challenges;
- a greater understanding of how to increase the positive effects of globalisation on health and reduce the negative effects.

ESP42: Methods of Health Services Research

Scheduled: 15 - 19 Aug 2016
Faculty: *Prof. N. Klazinga, MD PhD*
ECTS: 0.7

Health Services Research addresses issues such as access and quality of health care delivery, financing and use of health care services,workforce planning, implementation of change and the overall functioning and performance of health care systems.
This introductory course provides insight in the various research questions, research designs, data-collection methods and analyses methods used in health services research. It puts emphasis on the links between research, policy and practice. The course is organised around lectures and group exercises.

Objectives:

- Providing insight in the various research questions, research designs, data collection methods and analyses methods used in health services research.

ESP43: Principles of Genetic Epidemiology

Scheduled: 8 - 12 Aug 2016
Faculty: *Prof. C.M. van Duijn, Ir PhD*
ECTS: 0.7

This course aims to give a basic introduction to various methods used in classical genetic epidemiology. In combination with the course Searching Genes for Complex Disorders, the course offers an excellent introduction to genetic epidemiologic research for epidemiologists, clinicians and molecular biologists with no background in genetic epidemiology. Participants are introduced to the basic principles of population genetics, segregation, linkage and association analyses. The relevant background of human genetics and statistics is presented. The goal of the course is that participants are able to interpret the findings in modern genetic research.

Objectives:

- to give a basic introduction to various methods used in classical genetic epidemiology;
- ability to interpret the findings in modern genetic research.

ESP45: Primary and Secondary Prevention Research

Scheduled: 22 - 26 Aug 2016
Faculty: *Prof. O.H. Franco, MD PhD and Prof. H. de Koning, MD PhD*
ECTS: 0.7

This course will introduce and illustrate methods and practices of research in the planning, development and evaluation of interventions to prevent disease and maintain health. Primary and secondary prevention may work together, depending on the determinants of disease and technology available. Life style factors, like for example

cigarette smoking, dietary habits and physical activity, are important determinants of health and disease. Therefore, promoting healthy life styles is important in public health interventions.

Screening for diseases that are related to these determinants can possibly improve prognosis, gain life-years and quality of life. However, early detection also means a longer period of life during which a person is aware of having the disease, and false-positive test results will induce unnecessary diagnostic interventions. Crucial in prevention research is the individual and population perspectives, with consequences for designing a study, evaluating an intervention, communicating to the people and setting priorities. Special emphasis will be given to cancer research, cardiovascular interventions, and the role of lifestyle in prevention. The course will consist of lectures, exercises and presentations of illustrative examples of primary and secondary prevention research.

Objectives:

- introducing the methods and practices of primary and secondary preventive research;
- introducing the biases and interpretation of screening to detect diseases early in order to improve survival of quality of life;
- illustrating when to implement screening strategies, and how to implement and evaluate primary prevention strategies;
- giving up-to-date information on the determinants of and policies for cancer and cardiovascular prevention.

ESP48: Causal Inference

Scheduled: 15 - 19 Aug 2016
Faculty: *Prof. M. Hernán, MD PhD*
Prerequisites: Intermediate-level courses in epidemiology and biostatistics. Previous experience in epidemiologic research recommended
ECTS: 0.7

The goal of many epidemiologic studies is to quantify the causal effect of an exposure on an outcome. In contrast, commonly used statistical methods provide measures of association that may lack a causal interpretation even when the investigator 'adjusts for' all potential confounders in the analysis of a properly designed study.

To eliminate the discordance between the causal goals and the associational methods in epidemiology, it is necessary to a) formally define causal concepts such as causal effect and confounding, b) identify the conditions required to estimate causal effects, and c) use analytical methods that, under those conditions, provide estimates that can be endowed with a causal interpretation. These (causal) methods can be used under less restrictive conditions than traditional statistical methods. For example, causal methods allow one to estimate the causal effect of a time-varying exposure in the presence of time-dependent confounders that lie on the causal pathway between exposure and outcome.

This course combines counterfactual theory and graph theory to present an integrated framework for causal inference from observational data, with a special emphasis on complex longitudinal data. The course presents the latest methodologic developments for the design and analysis of longitudinal studies.

Objectives:

- recognize and formulate well defined questions concerning causal effects;
- use causal diagrams to represent a priori subject-matter knowledge and assumptions;
- identify the settings in which conventional methods for data analysis are inadequate.

ESP53: History of Epidemiologic Ideas

Scheduled: 15 - 19 Aug 2016
Faculty: *Prof. A. Morabia, MD PhD*
Prerequisites: No absolute pre-requisite but familiarity with the material taught in introductory and intermediate-level epidemiology courses is useful as the lectures move rapidly from basic to more advanced material
ECTS: 0.7

This is a methodology course, which focuses on the historical evolution of methods (e.g., study designs) and concepts (e.g., confounding, bias, interaction and causal inference) that constitute today's epidemiology. For each topic, we review and discuss the historical contexts and some landmark studies that led to specific innovations in terms of performance of group comparisons, population thinking and framing of hypotheses. We finally discuss the historical conditions for the emergence of epidemiology as a scientific discipline, the phases it went through and its potential, future developments.

Objectives:

- describe the historical context of the emergence and the evolution of epidemiologic methods and concepts;
- identify historical phases in the construction of theory for epidemiologic research;
- identify landmark studies that led to specific innovations in terms of group comparisons, population thinking and framing of hypotheses;
- integrate a historical perspective in your own teaching of epidemiology.

ESP57: Genomics in Molecular Medicine

Scheduled: 15 - 19 Aug 2016
Faculty: *Prof. A. Uitterlinden, PhD. J. van Meurs, PhD, F. Rivadeneira, MD PhD*
Prerequisites: Familiarity with general genetic concepts.
ECTS: 1.4

Molecular genetics plays an increasingly important role in medical research. The course addresses various molecular principles relevant for genetic epidemiological research. Different approaches will be discussed to come to the localisation of disease genes. Cloning of disease genes will be discussed from the bench point of view and with the use of modern bio-informatical methods. The course is particularly relevant for clinicians and epidemiologists who wish to be introduced in methods for identifying (complex) disease genes and its practical applications and basic knowledge of molecular biology.

Objectives:

- To understand the background of the application of molecular techniques in medicine and epidemiology;
- To understand how disease genes are identified;
- To be updated about advances in molecular genetics and population genomics.

ESP61: Social Epidemiology

Scheduled: 22 - 26 Aug 2016
Faculty: *Prof. J. Mackenbach, MD PhD, F. van Lenthe PhD*
ECTS: 0.7

This course aims to introduce and illustrate modern research methods in social epidemiology, i.e. the study of the social determinants and social outcomes of health. The three main areas to be covered are: the measurement of health inequalities, the explanation of health inequalities, and the evaluation of interventions and policies to reduce health inequalities. Application of the research methods will be illustrated with historical landmark studies as well as recent examples from the international literature.

The programme consists of lectures, hands-on exercises, and group discussions. The focus will be on socioeconomic inequalities in health, but the role of other social factors (such as ethnicity and marital status) will also be discussed.

Objectives:

- developing an understanding of research methods used in Social Epidemiology;
- discussing a number of substantive issues in Social epidemiology on the basis of recent research findings.

ESP62: Markers and Prediction Research

Scheduled: 22 - 26 Aug 2016
Faculty: *M. Kavousi, MD PhD, Prof. E. Steyerberg PhD*
Prerequisites: Introductory level background in epidemiology and biostatistics
ECTS: 0.7

Prognostic research is of growing importance, as globally more people are living with disease and clinicians and policy makers seek ways of targeting existing treatments and improving health outcomes. There is a rapid expansion in the number of new prognostic markers. Often, bold claims are made about their potential to assist in personalising approaches to medical care and treatment. Prognostic models may be useful to summarize the effects of multiple predictors but while commonly developed, such models are often not well validated or used in clinical practice.

This course aims to provide the basic knowledge and principles to evaluate the quality of prognostic research and its translation to inform decision making of clinicians and policymakers. Drawing on recent examples and current controversies in cardiovascular disease, cancer, trauma and other conditions, the course examines molecular biomarkers and genetic variants through to the quality of healthcare as predictors of outcome. Topics include design, conduct and analysis of prognostic research; outcomes research; prognostic factors and prognostic markers; prognostic models for risk prediction; and stratified and personalised medicine. There will be lectures, interactive debates and critical appraisal of papers, but no computer labs (the course does not cover advanced statistical methods, see Further reading). The course is suitable for undergraduates medical students, practicing clinicians, and those contemplating or doing a Masters or PhD in a related area.

ESP63: Masterclass: Advances in Genomics Research

Scheduled: 15 - 19 Aug 2016
Moderator: *Prof. A. Uitterlinden PhD*
ECTS: 0.4

In this Master Class, timely topics in genomics research will be addressed. Three renowned researchers will address the latest developments in epigenetics, forensic genomics, personalized medicine, whole genome sequencing, and new genetic variants.

ESP64: Masterclass: Advances in Epidemiologic Analysis

Scheduled: 8- 12 Aug 2016
Moderator: *O. Franco MD PhD*
ECTS: 0.4

In this Master Class timely topics in study design of epidemiologic and clinical studies will be addressed. Three renowned faculty members will address advanced study design issues in a seminar format.

ESP65: The Practice of Epidemiologic Analysis

Scheduled: 22 - 26 Aug 2016
Faculty: *A. Ikram, MD PhD, M. Vernooij, MD PhD, F. van Rooij MSc*
ECTS: 0.7

This is a course in which the theoretical background and practical application of basic epidemiologic analytic tools is discussed. Special attention will be paid to issues such as normalization, standardization, and categorization, combining multiple variables, combining multiple sources etc.

The goal is to provide students with the understanding and tools to perform epidemiologic data analysis. The course is particularly intended for students who have completed their data collection and move towards data analysis. No prior knowledge is required although understanding of basic epidemiology is helpful.

Objectives:
- To gain a better understanding of issues concerned with categorization and dichotomization of variables;
- To better understand the usage of normalization and standardization;
- To learn different methods to combine data from multiple sources.

ESP66: Logistic Regression

Scheduled: 8 - 12 Aug 2016
Faculty: *Prof. S. Lemeshow, PhD*
Prerequisites: Solid course on linear and multiple regression
ECTS: 1.4

This course provides theoretical and practical training for biostatisticians, epidemiologists and professionals of related disciplines in statistical modeling with particular emphasis on logistic regression. The increasingly popular logistic regression model has become the standard method for regression analysis of binary, multinomial and ordinal response data in the health sciences.

Objectives:
- Students will learn methods of statistical modeling when the response variable is nominal or ordinal scale;
- Students will become familiar with statistical software packages for computing binary, multinomial, ordinal and conditional logistic regression models.

ESP68: Introduction to Bayesian Methods in Clinical Research

Scheduled: 15 - 19 Aug 2016
Faculty: *Prof. E. Lesaffre, PhD*
Prerequisites: Basis statistics, experience with regression models, experience with R
ECTS: 1.4

This course provides an introduction to Bayesian methods with an emphasis on the intuitive ideas and applications. The course treats the basic concepts of the Bayesian approach, such as the prior and posterior distribution and their summary measures (mean, median, credible interval, etc), the posterior predictive distribution and the Bayes factor. The Bayesian approach will also be compared, both conceptually as well as practically, with the classical frequentist approach. Markov Chain Monte Carlo techniques are introduced and exemplified in a variety of applications.
The Bayesian approach will be illustrated in clinical trials, epidemiological studies, meta-analyses, diagnostic testing, agreement studies, etc. WinBUGS and OpenBUGS will be used as software.

ESP69: Causal Mediation Analysis

Scheduled: 22 - 26 Aug 2016
Faculty: *Prof. T. VanderWeele, PhD*
Prerequisites: Familiarity with linear and logistic regression will be required to fully benefit from the course
ECTS: 0.7

The course will cover some of the recent developments in causal mediation analysis and provide practical tools to implement these techniques. Mediation analysis concerns assessing the mechanisms and pathways by which causal effects operate. The course will cover the relationship between traditional methods for mediation in epidemiology and the social sciences and new methods in causal inference. For dichotomous, continuous, and time-to-event outcomes, discussion will be given as to when the standard approaches to mediation analysis are valid. Using ideas from causal inference and natural direct and indirect effects, alternative mediation analysis techniques will be described when the standard approaches will not work. The no-confounding assumptions needed for these techniques will be described.

SAS, SPSS and Stata macros to implement these techniques will be covered and distributed to course participants. The use and implementation of sensitivity analysis techniques to assess how sensitive conclusions are to violations of assumptions will be covered. Discussion will be given to how such mediation analysis approaches can be extended to settings in which data come from a case-control study design. The methods will be illustrated by various applications.

Objectives:
- Understand when traditional methods for mediation fail;
- Learn the concepts about mediation from causal inference;
- Learn methods and sensitivity analysis techniques for mediation;
- Develop facility with use of software for mediation.

ESP70: Fundamentals of Medical Decision Making

Scheduled: 15 - 19 Aug 2016
Faculty: *J. Wong, MD PhD*
ECTS: 0.7

This course will provide an introduction to health care decision making. Given the uncertainty, trade-offs and values that are involved, how should patients, physicians and policymakers navigate through a complex and tangled web of diagnostic and therapeutic choices to make the best decisions for individuals and for populations? Medical interventions may have benefits but also adverse effects, e.g., surgery may lead to undesirable complications, and diagnostic technologies may produce false or inconclusive results. In many clinical and health policy decisions it is necessary to counterbalance benefits and harms and to trade off competing objectives such as maximizing life expectancy vs. optimizing quality of life vs. minimizing the resources required. In this course we

will examine a proactive approach to decision making in health care and discuss how to manage uncertainty, choose the best treatment, value outcomes, interpret diagnostic information, decide whether to test or treat (or neither), find and summarize evidence and optimize resource use.
Objectives:

- Apply a systematic rational approach to decision making in health care;
- Recognize the role of uncertainty in testing and treatment decisions;
- Assess, value and weigh benefits and harms in medical decision making;
- Describe how to consider economic costs in health care decisions.

ESP72: Joint Models for Longitudinal and Survival Data

Scheduled: 15 - 19 Aug 2016
Faculty: J. Lubsen, MD PhD
Prerequisites: Previous basic course in medical statistics and/or methods of research in epidemiology is an asset
ECTS: 0.7

Longitudinal and time-to-event outcomes are the main types of outcomes encountered in medical studies. Primary examples of the former are biomarkers or other patient parameters that are measured during follow-up, whereas for the latter examples include the time to relapse of the disease, time to re-operation or time to death. This course introduces a new type of statistical models that can be used to investigate the association structure between longitudinal and survival outcomes.

Objectives:

- Explain when these models should be used in practice and how they can be utilized to extract relevant information from the data;.
- Introduce the concept of dynamic predictions that has direct applications in personalized medicine.

EWP02: Advanced Topics in Decision Making in Medicine

Scheduled: Feb/Mar 2017
Faculty: *Prof. M. Hunink, MD PhD*
Prerequisites: Fundamentals of Medical Decision Making (ESP70) or Diagnostic Research (EWP05) or Clinical Epidemiology (CE02) or equivalent introductory courses.
ECTS: 2.4

This course deals with advanced topics in clinical decision making. We will discuss a proactive systematic approach to decision making in health care and review the principles of cost-effectiveness analysis. Special topics that will be addressed include problems with utility assessment and multi-attribute utility theory, cost-analysis, modelling issues, Markov process models, Monte Carlo simulation modelling, and Value of Information analysis. The course will consist of lectures in the morning and a computer practicum in the afternoon.

During the week you will be given the opportunity to work on an own case example. Think of a decision problem that you are currently involved in or were recently confronted with. It may be a clinical decision problem involving a patient you care for, a management decision problem you are struggling with, a public health policy problem you are involved with, or a personal (preferably medical) decision problem. It must, however, be something you are willing to talk about in class and are motivated to work on.

Objectives:

- presentation or paper of case example, illustrating that the student has understood and can apply the concepts taught in the course.

EWP03: Pharmaco-epidemiology and Drug Safety

Scheduled: Feb/Mar 2017
Faculty: *Prof. B. Stricker, PhD, Prof. M. Sturkenboom PhD and K. Verhamme, MD PhD*
ECTS: 1.9

Pharmaco-epidemiology plays a role of increasing importance in the field of drug safety and regulatory decision making. On the one hand, the introduction of computers into clinical practice facilitates the performance of large-scale cohort studies and nested case-control studies. On the other hand, it creates some problems regarding the quality of outcome and exposure assessment. Because the commercial consequences of pharmaco-epidemiological studies may be enormous, discussions in this area may be heated. In this course, referring to established drug

safety problems will highlight some of the complex aspects of outcome and exposure assessment in pharmaco-epidemiology.

Objectives:
- Understanding the complex aspects of outcome and exposure assessment in pharmaco-epidemiology.

EWP05: Diagnostic Research

Scheduled: Feb/Mar 2017
Faculty: *Prof. M. Hunink, MD PhD*
ECTS: 1.4

In this course we will discuss the principles of interpreting diagnostic test results and evaluating diagnostic tests. We will first review basic concepts such as sensitivity, specificity, predictive probabilities, likelihood ratios, Bayes theorem and ROC curves. Then we will discuss possible forms of bias that can influence studies evaluating diagnostic test performance and a method to correct for verification bias. Diagnostic meta-analysis and summary ROC curves will be discussed. Next we will focus on modelling issues in using decision analysis to model diagnostic decisions. Conditional independence and multivariable prediction rules will be explained. The week will end with determining the optimal operating point on the ROC curve and estimating target values for new diagnostic technology.

Objectives:
- Understanding the principles of interpreting diagnostic test results and evaluating diagnostic tests.

EWP10: Advanced Topics in Clinical Trials

Scheduled: Feb/Mar 2017
Faculty: *Prof. M. Campbell, PhD, T. Clayton, PhD and Prof. J. Lubsen, PhD*
ECTS: 1.9

The Randomised Clinical Trial (RCT) is generally accepted as the most reliable way of assessing the efficacy of therapy. Reports on the results of RCTs appear in almost every issue of major medical journals. Medical doctors and other health professionals are expected to be able to judge the scientific merits and clinical relevance of published RCTs, even if they never actively participate in the design and/or execution of an RCT.
In recent years, the quality of trial reporting has improved. Influenced by the CONSORT statements, a certain uniformity in trial reporting both within and between journals has been achieved. Nonetheless, appraising trial reports remains a challenge and requires that several very different issues be addressed, such as
- Is the design of the trial described in the report concerned appropriate, given its stated objective? Is the trial large enough to potentially answer the question posed
- Both randomisation and (if applicable) double-blinding are procedural concepts. The correctness of the procedures involved cannot be verified from the data. This being so, does it look from what is stated in the methods section of the report concerned that the trial was indeed randomized and double-blind?
- Given acceptable procedures overall, is the data display informative and are the statistical methods used appropriate? Was the trial stopped earlier than planned, and if yes, what are the consequences? Is there data that one would like to know but that is not given, and if so, can this be derived from the data published?
- And finally, does the trial contribute to the resolution of a clinical problem that can be delineated in medical practice?

Objectives:
This course is about reading trial results papers, not about how to design them. The objective is to familiarize participants in detail with how trial methods and results are reported, and to develop the skills needed to critically appraise a given report both with respect to trial methodology and clinical relevance of the results.

EWP13: Advanced Analysis of Prognosis Studies

Scheduled: Feb/Mar 2017
Faculty: *Prof. E. Steyerberg. PhD*
Prerequisites: Knowledge of basic epidemiological notions, especially cohort studies and randomized controlled trials. Knowledge of statistical concepts (t-test, normal distribution, correlation) and regression techniques (linear, logistic, Cox regression).
ECTS: 0.9

Prognostic models are increasingly published in the medical literature each year. But are the results relevant for clinical practice? What are the critical elements of a well- developed prognostic model? How can we assume that the model makes accurate predictions for our patients, and not only for the sample that was used to develop the model (generalizability, or external validity)? In the course we will address these and other questions from a methodological perspective, using examples from the clinical literature. The participants will be encouraged to participate in interactive discussions and in practical computer exercises.

Objectives:

- increasing the knowledge of the roles that prognostic models may play in clinical practice and the critical factors that determine the validity of predictions from a prognostic model;
- gain insight in the pitfalls in prognostic model development with standard statistical techniques;
- acquire both theoretical and practical knowledge on advanced statistical techniques in prognostic model development and validation, specifically on regression modeling.

EWP24: Survival Analysis for Clinicians

Scheduled: Feb/Mar 2017
Faculty: *H. Putter*
Prerequisites: Knowledge of statistics and regression models
ECTS: 1.9

Survival analysis is the study of the distribution of life times, i.e. the times from an initiating event (birth, diagnosis, start of treatment) to some terminal event (relapse, death). Survival analysis is most prominently (but not only) used in the biomedical sciences.

A special feature of survival data is that it takes time to observe the event of interest. A result of this seemingly innocent observation is that for a number of subjects the event is not observed, but instead it is known that it has not taken place yet. This phenomenon is called censoring and it requires special statistical methods.

During the course different types of censored and truncated data will be introduced and techniques for estimating the survival function by employing both parametric and non-parametric methods will be illustrated. Also techniques for testing equality of survival functions (the log-rank test and alternatives) are discussed. Finally regression models for survival analysis, based on the hazard function (most notably the Cox proportional hazards model), will be studied in great detail.

Special aspects such as time-dependent covariates and stratification will be introduced. Techniques to be used to assess the validity of the proportional hazards regression model will be discussed. The last part of the course touches on models for multivariate survival analysis, including competing risks and multi-state models and frailty models. Finally, aspects of the planning of clinical trials with lifetime data will be discussed.

The aim of this course is to introduce participants to the statistical analysis of time-to-event outcomes. The course will be explanatory rather than mathematically rigorous. Sufficient detail will be given such that the participants will have a clear view on the different survival analysis approaches, and how they should be used in practice. To this end, the majority of the concepts introduced in the course will be illustrated in the R statistical language using package Rcmdr.

Objectives:

- Understand the concept of censoring and its implications for statistical analysis;
- Be familiar with the most important techniques in survival analysis, such as the Kaplan-Meier estimate, the log-rank test and proportional hazards regression;
- Understand the underlying assumptions and limitations of these techniques;
- Be able to perform statistical analysis of time-to-event data and interpret the results.

This course is equivalent to the Erasmus Summer Programme course Survival Analysis (ESP28) in August.

EWP25: Principles of Epidemiologic Data Analysis

Scheduled: Feb/Mar 2017
Faculty: *Prof. K.J. Rothman, MD PhD*
Prerequisites: Completed NIHES Master's programme or equivalent knowledge
ECTS: 0.7

The course will present the basic precepts and the principles underlying the primary methods of epidemiologic data analysis. The aim of the course is for the participant to arrive at a coherent conceptualization of the core principles of epidemiologic data analysis. This is not a statistics course; there is no emphasis on proficiency in the execution and calculation of results or how to build mathematical models.

The course begins with a discussion of the principles of epidemiologic data analysis, and then progresses to a discussion of precision and validity, placing a strong emphasis on a quantitative approach to analysis, using estimation, rather than a qualitative approach based on statistical significance testing. After covering the analysis of crude data, the focus shifts to the control of confounding using stratified analysis and multivariate models. Other topics that are covered include the analysis of matched data, the evaluation of interaction, the use of multivariate summary confounder scores (including propensity scores), imputation of missing data, sensitivity analysis, and the estimation of trends in effect.

The class presentations will be supplemented with discussion of selected published papers and computer assignments using the Episheet spreadsheet to illustrate key analytic concepts.

Objectives:

- Students will become conversant with the principles of estimation of epidemiologic measures from basic epidemiologic data;
- Students will be able to explain and demonstrate the advantages of stratified analysis as a primary approach to epidemiologic data analysis, and to use a spreadsheet program to conduct basic epidemiologic analysis of stratified data, and to interpret the results;
- Students will be able to describe a strategy for using regression models in epidemiologic data analysis, either using an outcome model or a model that serves as a confounder summary score.

GE02: Genetic-epidemiologic Research Methods

Scheduled: 19 Oct - 11 Nov 2016
Faculty: *N. Amin, PhD and Prof. S. Heath, PhD*
Prerequisites: Principles of Genetic Epidemiology (ESP43),
Genomics in Molecular Medicine (ESP57) and Biostatistical Methods I: Basic Principles (CC02).
ECTS: 5.1

The aim of this course is to introduce participants to the basic principles of genetic epidemiological research.

The first part of the course is dedicated to binary traits, covering the basics of probability theory, hypothesis testing, risk calculation in families, and principles of complex segregation analysis. The second part of the course focuses on the genetics of quantitative traits, covering the concept and estimation of heritability and basic quantitative trait linkage analysis using modern genetic analysis software such as SOLAR and MERLIN. In the third part of the course design of genetic epidemiological studies will be discussed. This will be illustrated by practical examples and an assignment to develop a study.
During the third week of the course, students will work in groups on this assignment, and will prepare a presentation.

Objectives:

- introduce participants to the basic principles of genetic epidemiological research.

GE03: Advances in Genome-Wide Association Studies

Scheduled: Winter/Spring 2017
Faculty: *Prof. C.M. van Duijn, Ir PhD, Y. Aulchenko, PhD, Prof. B. Müller-Myhsok, P. Scheet, PhD*
Prerequisites: Understanding of genetic epidemiology and Statistics (regression analysis and maximum likelihood estimation); familiarity with PC-compatible computers is required.
ECTS: 1.4

This 5-day advanced course aims to give an overview of new developments in the field of genome wide association studies for those with a background in genetics, epidemiology or statistics.

In the first part of the course, issues concerning the design and analysis of genome-wide association (GWA) analysis will be covered using standard software such as Plink and genABEL. This part will include genetics data quality control, practical GWA analysis of quantitative and binary traits, methods to detect and correct for stratification, and to model epistastasis. In the second part we will extend to an integrated approach of data analysis including eSNPs and new developments in the analysis of whole sequence data. Finally, we will discuss the perspectives for genetic testing in clinical practice.

A major part of the teaching programme consists of hands-on exercises.

Objectives:

- gain insight in new developments in the field of genome wide association studies

GE05: Family-based Genetic Analysis

Scheduled: Winter/Spring 2017
Faculty: *Y. Aulchenko, PhD, Prof. H. Cordell, PhD and Prof. P. Holmans, PhD*
Prerequisites: Basic understanding of genetic epidemiology and statistics (regression analysis and maximum likelihood estimation); familiarity with PC-compatible computers is required.
ECTS: 1.4

This course is organized for researchers with a background in genetic epidemiology and/or statistics.

The focus of the course is on theoretical background and practical issues in model-free linkage studies of complex genetic traits. Both qualitative outcomes (e.g. diseases) as well as quantitative (continuous) traits are addressed. For quantitative traits Haseman-Elston methods and maximum likelihood estimation of variance components are discussed. Other issues covered are the inclusion of covariates, extreme sampling, and the generalization of methods based on sibling pairs to other pedigree structures. Family-based association studies, also in the context of whole-genome association analysis, will be considered, including total tests which utilise between- and within family variation, and also Transmission-Disequilibrium-like tests.

The teaching program consists mainly of hands-on exercises using computer programs that are available on the Internet.

Objective:

- To gain insight into the background and new developments in the field of family-based genetic research.

GE08: SNPs and Human Diseases

Scheduled: 14 – 18 Nov 2016
Faculty: To be announced
Prerequisites: Basic understanding of genetic epidemiology (level ESP29) and statistics (regression analysis and maximum likelihood estimation); familiarity with PC-compatible computers is required.
ECTS: 1.4

The analysis of DNA polymorphisms, in particular Single Nucleotide Polymorphisms (SNPs), is becoming a standard research approach to understand causes of disease, in particular the so-called “complex” diseases such as diabetes, osteoporosis, cancer, etc. The aim of this course is to give a broad introduction in SNP techniques and applications. The course will deal with five main topics, which are in logical order:

1. General Introduction and Study design,
2. Bio informatic tools for SNP finding and analysis,
3. Genotyping techniques and DNA management,
4. Data analysis, and
5. Examples of research in which SNPs are used.

Every day will cover one topic. The programme for every day will consist of four to six presentations, including international speakers, and there are learning-by-doing sessions. The possibility exists for participants to discuss their own data and work. This course is organized by the Molecular Medicine postgraduate school (MolMed) in collaboration with NIHES.

Objectives:

- to get a broad impression of SNP techniques and applications.

GE10: Mendelian Randomization

Scheduled: Spring 2018
Faculty: *N. Sheehan, PhD, E. Jones, PhD*
Prerequisites: Understanding of genetic epidemiology and Statistics (elementary probability, and regression analysis)
ECTS: 0.9

This 3-day course aims to give an overview of recent developments in drawing causal inferences from epidemiological data and is aimed at individuals with a background in epidemiology or statistics. The first day will comprise a brief introduction to graphical models since these provide a natural framework for expressing and manipulating many of the concepts involved. We will then go on to causal modelling and the need for a formal causal framework before explicitly considering causal modelling in epidemiological settings. The second day will focus on instrumental variable methods with Mendelian randomisation applications as the primary example. Various theoretical issues, together with their relevance to practical applications in terms of what can and what cannot be done, will be discussed. On the final day, current topics including the use of multiple instruments, Bayesian approaches to Mendelian randomisation and implications for case-control data will be introduced.

Objectives:
- gain insight in new developments in the field of genome wide association studies;
- gain insight into disentangling the concepts of causation and association.

GE13: An Introduction to the Analysis of Next Generation Sequencing Data

Scheduled: Spring 2017
Faculty: *Prof. C.M. van Duijn, Ir PhD, N. Amin, PhD, and invited speakers*
ECTS: 1.4

This course provides an introduction to working with Next-Generation Sequencing (NGS) data. It is aimed at people with access to aligned NGS data who want to learn how to work with this data and what the possibilities and limitations of NGS are. Lectures will be complemented with practical sessions in which the student will gain hands-on experience with various tools and techniques.

Subjects that will be covered are:
- NGS: an introduction to methodology and techniques;
- Basic statistics of NGS data, e.g. coverage;
- Aligning the sequence reads;
- Calling sequence and structural variants;
- Dealing with various file formats (samtools, VCFtools, GATK);
- Annotating sequence and structural variants;
- Evaluating functional effects of the genetic variants on proteins;
- Conversion to other formats;
- Single variant and Collapsed genotype analyses with various tools (e.g. seqMeta, RAREMETAL and RVtest);
- Finding variants with recessive effects and compound heterozygosity;
- Search for rare variants in families and population based studies for complex phenotypes;
- Search for rare variants in Mendelian disorders, and
- Imputation of sequence variants.

GE14: Linux for Scientists

Scheduled: 17 - 18 Oct 2016
Faculty: *L. Karssen, PhD*
ECTS: 0.6
Prerequisites: No previous Linux knowledge is expected, however, on order to gain most from the course it is recommended to have done a few analyses on a Linux server already.

This course aims to teach users of a Linux/UNIX system how to work with the command line interface. After an introduction to some history and basic concepts the basic commands for file and directory manipulation will be discussed. Subsequently, the students will learn how to manage processes as well as input and output redirection, followed by more advanced text processing utilities like 'sed' and 'gawk'.

The second half of the course shows how to write Bash shell scripts to automate tasks. This knowledge is then used when discussing the Sun Grid Engine job queue system in use on the epib-genstat servers. The course will focus on providing hands-on experience, so those who have been using a Linux system for a longer time will be able to skip the parts they already feel comfortable with and move on to more advanced concepts like regular expressions, version control and advanced use of a text editor.

Previously Linux for Scientists (GE14) had a different course code: SC09.

After completing this course, the students should be able to efficiently use a Linux system and its tools to:

- manage your project data from the command line (i.e. without having to copy files back and forth to the server);
- reformat output from previous analyses and use this as input for a subsequent analysis step;
- write scripts that automate repetitive tasks;
- efficiently run time-consuming analyses like a GWAS without overloading the server.

HS02a: Analysis of Population Health

Scheduled: 17 - 21 Oct 2016
Faculty: *J. Haagsma., PhD, and others*
Prerequisites: Methods of Public Health Research (ESP11)
ECTS: 1.9

Public Health Research: from Epidemiology to Health Promotion
Module: Analysis of Population Health

This module aims to teach methods to assess the health of populations at national and local levels. Students are taught to calculate, apply and interpret population-based measures of mortality, quality of life and disease occurrence. In addition, students learn methods to assess time trends in population health (e.g. APC methods) and to analyse inequalities in health between social groups.

After completing the course, the student is able to:

- quantify population health by using population-based measures of general health, based on life tables and related techniques;
- assess the public health impact of major diseases, by using measures on their prevalence, incidence and impact on population health;
- describe past trends and explore future developments in population health, by using age-period cohort analyses and other techniques;
- describe socio-economic and ethnic differences in population health, and apply statistical approaches to explain these differences.

HS02b: Analysis of Determinants

Scheduled: 24 - 26 Oct 2016
Faculty: *F. van Lenthe, PhD, Prof. A. Burdorf Ir PhD and others.*
Prerequisites: Methods of Public Health Research (ESP11) and Analysis of Population Health (HS02a)
ECTS: 1.9

Public Health Research: from Epidemiology to Health Promotion
Module: Analysis of Determinants

This module elaborates on research of the analysis of determinants of and inequalities in population health and risk factors of disease. Students will be introduced in a) current insights in the main determinants of population health and risk factors of disease, b) determinants of inequalities in population health, c) research methods for the analysis of these determinants and d) challenges for future research in these issues.

Objectives:

- ability to analyse the determinants of population health and disease;
- ability to analyse environmental and psychosocial determinants of exposure to risk factors.

HS02c: Intervention Development and Evaluation

Scheduled: 31 Oct - 4 Nov 2016
Faculty: *F. van Lenthe, PhD and others*
Prerequisites: Methods of Public Health Research (ESP11), Analysis of Population Health (HS02a) and Analysis of Determinants (HS02b)
ECTS: 1.9

Public Health Research: from Epidemiology to Health Promotion
Module: Intervention Development and Evaluation.

This module elaborates on the intervention development, implementation and evaluation phases in the model of planned promotion of public health. Students will a) be introduced to strategies and opportunities of primary and secondary prevention, b) learn how to work from determinants to interventions, i.e. how to translate determinants into intervention goals and intervention components and c) learn about the opportunities and challenges of evaluation of primary and secondary prevention interventions and d) be introduced to theory and challenges in dissemination of prevention interventions. The course uses examples from health behaviour change, cancer screening, and vaccination.

Objectives:

- to understand the important strategies for prevention;
- to have basic insight into the process of prevention intervention development;
- to have knowledge of the opportunities and barriers in evaluation of prevention interventions;
- to have skills to choose and apply the different research designs that can be used in evaluation of prevention intervention.

HS03a: International Comparison of Health Care Systems

Scheduled: 14 - 18 Nov 2016
Faculty: *D. Kringos, PhD, and invited speakers*
ECTS: 1.4

Insight into the structure, process and outcome of health care systems is vital to be able to implement health care reforms that are effective in improving the health system performance. International comparisons of health care systems and the underlying political, organizational and financial arrangements are a multidisciplinary research field with a mixture of quantitative and qualitative methods. This course will present the various methodological approaches and will build on recent national and international experiences with comparative research.

The course starts with a clear conceptualization and definition of a health care system, definitions of key system components such as the service delivery system (through professionals and institutions), financing, role of the government and role of patients. Health system performance will be discussed in terms of effectiveness, equity and efficiency. Analytical perspectives taken will come from public health as well as from political sciences and economics. The 2009 course will also deal with the recent work of the WHO and OECD with respect to health system performance measurement and management.

Objectives:

- ability to describe basic concepts and models of health care organisation and delivery;
- ability to discuss these concepts and models from a public health and policy perspective;
- ability to make a comparison of health care systems from different perspectives;
- ability to make an analysis of one's own health care system.

HS04: Medical Demography

Scheduled: Winter/Spring 2017
Faculty: *W. Nusselder, PhD and others*
Prerequisites: Public Health Research Methods (HS02) or equivalent. In addition, a basic proficiency in the use of spreadsheets is required.
ECTS: 1.1

The first day of the course will start with a number of basic projection techniques used in demography, and illustrate these techniques with the prediction of future trends in life expectancy. Next, the student will learn to apply the life table, which is a simple yet powerful technique to study the population dynamics underlying public

health.

The second day will focus on summary measures that combine mortality and morbidity estimates, such as healthy life expectancies and disability-adjusted life expectancy. It will discuss two types of life tables that are used to this end: the Sullivan life tables, and the multi-state life tables. Attention is also given to assessing the effect on population health of specific diseases, such as stroke or cancer.

The third day will discuss the use of risk factor models, which are applied to assess the ways in which changes in risk factors such as smoking and overweight could affect population health. Examples will be based on the Prevent model. This “dynamic” model is especially designed to assess the “timing” of future changes in population health.

The last day will illustrate the use of population health models in a series of studies that evaluated the population health impact of different types of interventions. We will apply a broad model used to compare different preventive policies, and next apply another model to evaluate the health benefits of prevention of obesity.

HS05: Planning and Evaluation of Screening

Scheduled: Winter/Spring 2017
Faculty: *Prof. H. de Koning, PhD and others*
ECTS: 1.4

This course focuses on the design and the evaluation of health care programmes for the early detection of disease or screening. Early detection takes place within a demographical-epidemiological context. Basic concepts include improvement of prognosis by early detection, life years saved, and other effect measures. The test characteristics will have consequences for the favourable and unfavourable effects of screening.

There are a number of designs for the assessment of the effectiveness of screening, such as randomized-controlled trials, observational prospective studies and case control studies. Evaluation methodologies, such as cost-effectiveness, cost-utility and technology assessment are available, including the concepts of quality adjustment of life years and of time preference. Detailed case studies include cervical, breast and prostate cancer screening, genetic screening, youth health care and screening for tuberculosis, e.g. for high risk groups. Several computer aids for the evaluation of screening are presented.

Objectives:
At the end of this course, one should have obtained understanding of and insight in:

- determinants for effectiveness;
- measures for effectiveness of screening, levels of evidence for effectiveness, trial designs, implementation of trials;
- possible negative side effects, determinants of side effects;
- measurement of quality of life, quality adjustment of life years;
- the use of models for data analysis (describing the underlying natural history of the disease) and for predictions;
- definition of high risk groups;
- cost effectiveness analysis, optimization of strategies, time preference.

HS09: Maternal and Child Health

Scheduled: Winter/Spring 2017
Faculty: *Prof. H. Raat, MD PhD and others*
Prerequisites: Introductory level epidemiology
ECTS: 0.9

The health of women of child bearing age and of children has an important impetus on public health. The aim of the course is to provide an insight into child health from conception onwards.

Determinants of fecundity, pregnancy and pregnancy outcome are discussed as a prerequisite for child health. Perinatal and infant mortality in an international perspective, growth and development are discussed as important health indicators. Preventive interventions such as vaccinations, screening programmes and health promotion are discussed. Special attention is given to the health of groups at risk for health problems such as children of low socio-economic classes and children of ethnic minorities. Psychosocial health problems are said to be on the increase. Facts and figures in an international perspective will be presented. In adolescence, life style habits are developed and appropriate health promotion is important. Examples of health promotion programmes are

discussed. The programme consists of presentations, exercises and group discussions.

Topics covered: 1) Determinants of fecundity, pregnancy and pregnancy outcome. 2) Perinatal and infant mortality. 3) Growth and development preventive interventions. 4) Psycho-social health problems. 5) The health of groups at risk. 6) Adolescence and health promotion.

Objectives:
- gain insight into child health from conception onwards.

HS11: Quality of Life Measurement

Scheduled: Winter/Spring 2017
Faculty: *Prof. J. Passchier, PhD, Prof. J. van Busschbach, PhD and others*
Prerequisites: Introductory level epidemiology
ECTS: 0.9

In recent years, the patient's assessment of quality of life has developed to an important target in epidemiology and health services research. Moreover, quality of life measures are also more and more used as criteria in reimbursement policy, most notably in QALY-analysis.

The aim of the course is to provide the candidates firstly, with the knowledge required for the evaluation of quality of life instruments and to select the measures which are both valid and sensitive for their research purposes. Quality of life measurement will be presented from a clinical perspective (trials), epidemiology (population level) and a health economics perspective. As most investigations are done from more then one of those perspectives, the relation between them is discussed.

After the course participants will be able to use the most common standard quality of life instruments and should be able to make their own tailored of disease specific instrument.

Programme:
- Background of 'health status' and 'quality of life.
- Principles of construction of a quality of life questionnaire.
- Available instruments.
- Application.
- Adaptation instruments for specific research questions: increase sensitivity.
- QALY-analysis.
- Practical and ethical value of measuring quality of life in a reimbursement setting.

Objectives:
- acquire knowledge required for the evaluation of quality of life instruments and to select the measures, which are valid and sensitive for their research purposes;
- gain insight in the instruments currently available for description and valuation of health;
- acquire knowledge required for the justified application in evaluation research.

HS15: Health Services: Research and Practice

Scheduled: Winter/Spring 2017
Faculty: *D. Kringos, PhD, Prof. N. Klazinga, MD PhD and others*
Prerequisites: Methods of Health Services Research (ESP42) or equivalent course.
ECTS: 0.9

The course explores the various hurdles in linking the principles of health services research with the realities of practice. Researchers will be taught how to become more sensitive to the information needs of practitioners, managers and policy makers and how to make their studies more practice-oriented while balancing methodological requirements.

The various steps of the research cycle will be discussed (formulation of the research question, study design, data-collection, analysis and presentation of results), and for each step the focus will be on the research-practice interface. In addition to classical research plans, the activities before the study is designed and the follow-up activities to promote implementation in practice, will be highlighted. Special emphasis will be put on the independent role of the researcher in the various forms of evaluation research. The course will be a combination of lectures and exercises and on the third day participants will be asked to present their own practice-based health services research proposal.

This module is offered in cooperation with the CaRe research school and is developed at the request of ZonMw (Netherlands Organisation for Health Research).

Objectives:

- increasing the knowledge of researchers on the interaction between health services research and practice during the various stages of the health process;
- developing skills to optimise the relation between health services research and practice;
- working on a more practice oriented attitude of health services researchers.

HS18: From Problem to Solution in Public Health

Scheduled: Winter/Spring 2017
Faculty: *E. van Beeck, PhD, Prof. D. van de Mheen, PhD, and others*
ECTS: 1.1

The current challenges in public health require a strong link between science, policy and practice. This link is bi-directional. Professionals in practice can use their vast experience to guide better and more targeted research. Policy makers can identify which solutions may work or not and researchers can provide better evidence for public health programmes.

In two Master Classes experienced researchers and policy makers will work together with participants on major public health problems. The public health problems selected are addiction & substance use, and injuries. Through intensive interaction participants will learn (1) how to make a comprehensive analysis of the problem, (2) how this analysis will guide the required evidence-base for tackling the problems, and (3) how to plan and evaluate appropriate preventive interventions.
The Master Classes are restricted to 25 participants and will require an intense, active participation.

MP01: Psychology in Medicine

Scheduled: Spring 2017
Faculty: *R. de Jongh, PhD, and others*
ECTS: 1.4

Medical psychologists study the way somatically ill people think, act and feel. The aim of this course is to teach students about psychological determinants of illness and illness behavior, the psychological consequences of somatic illness and psychological care for somatic patients. First, you'll learn about 'normal' reactions to disease. We'll then focus on abnormal and pathological reactions to somatic illness and on problems that patients might have in adjusting to their disease.

We will discuss models that explain why some people find it difficult to adjust to their disease, such as the stress coping model and the stress vulnerability model. Other models that will be discussed in this course include the Health Belief Model, the Theory of Planned Behavior and the Stages of Change Model. These models are widely applied by medical psychologists in interventions for somatic patients. Modern neuroscientific models for understanding behaviour and behavioural disorders will be addressed as well. In this course, we will focus on various somatic problems, such as diabetes, inflammatory bowel disease, infertility, organ transplantation and chronic pain.

Finally, basic theories of doctor-patient communication will be discussed, as communication between doctors and patients has become more and more important.
The learning method in this course is problem-based learning. Furthermore, you will build a new model for understanding a complex and realistic problem in medical psychology.

Objectives:

- Understanding and applying the major models and theories in medical psychology;
- Understanding the complex relationship between somatic, psychological and social aspects in disease and health;
- Understanding principal theories of doctor-patient communication.

MP03: Psychopharmacology

Scheduled: Spring 2017
Faculty: *R. de Jongh, PhD and others*
ECTS: 1.4

Medical psychology is all about the interaction between mind and body: how do physical complaints affect our psychological functioning? But also: how does our psychological functioning affect us physically? When dealing with this interaction in a clinical setting, drug treatments often play an important role. Patients receiving drug treatment for psychiatric disorders frequently suffer physical side-effects, and drugs prescribed for somatic disorders can influence our mental state.

Therefore, medical psychologists need to know which drugs are prescribed for common psychiatric and somatic disorders, and need to have a basic understanding of how these (psychoactive) drugs work, how and why they invariably lead to side-effects, and how these side-effect affect compliance. We will look at drug treatment for psychiatric disorders such as depression and schizophrenia, but also at drugs like corticosteroids – used in the treatment of somatic conditions such as inflammatory bowel disease – which have been found to increase the risk of suicidal behavior and neuropsychiatric disorders (i.e. depression, panic and manic episodes).

MP05: Preventing Failed Interventions in Behavioral Research

Scheduled: Spring 2017
Faculty: *A. van 't Spijker, PhD, L.E. de Graaf, PhD*
ECTS: 1.4

This course elaborates on intervention development, implementation and evaluation in the field of medical psychology. The focus is on learning from encountered difficulties, mistakes en failures from previous research and researchers. Questions that will be discussed are:

- How to design an intervention taken into account both common and specific therapy factors?
- How to evaluate the effectiveness of your intervention and not the effectiveness of the therapist?
- How to motivate other professionals and institutions to cooperate in a multicenter trial?
- How to prevent loss to follow-up and dropout?
- How to prevent various biases in your outcome measures?
- What is the best available outcome instrument for the intervention studied?
- How to determine which elements of your intervention are most effective?
- How to implement your intervention?

Objectives:

- Understanding the rationale of interventions in the psychosocial care for somatic patients;
- Understanding the development of psychological interventions incorporating common and specific therapy factors;
- Understanding the difficulties and barriers in psychological intervention research;
- Being able to choose and apply different strategies in psychological intervention research;
- Being able to choose an appropriate outcome measure, based on a state-of-the-art overview of psychological questionnaires.

PU03: Site Visit to the Municipal Health Service Rotterdam

Scheduled: Spring 2017
Faculty: I. Janssen, MSc
ECTS: 0.3

The site visit is a orientation on public health practice in the Netherlands. The visit will be to the Municipal Public Health Service of Rotterdam (GGD Rotterdam). The objective is to provide the participant with a brief insight on how the GGD is organized and which services are provided to the community. After the field visit the participant is able to describe the learning experience regarding the visit in a structured report and to compare the services provided by the GGD and the way that these services are implemented with public health services in the participant's country of origin or country of work.

Objectives:

- providing a brief insight on how the GGD is organized and which services are provided to the community;
- ability to describe the learning experience regarding the visit in a structured report and to compare the services provided by the GGD and the way that these services are implemented with the public health services in the participant's country of origin or country of work.

PU04: Integration module

Scheduled: June 2017
Faculty: *Prof. A. Burdorf, Ir. PhD, and the research supervisors of the students in the Public Health programme.*
ECTS: 0.3

Masters' students in Public Health will have to demonstrate their ability to integrate the various perspectives, concepts and approaches that have been taught during the programme. This is done on the basis of a (draft) research paper that every candidate as to write during the second half of the programme. Students will be asked to make a presentation of the results of their research, and to present their views about the implications of these results for public health. These presentations will be followed by a discussion with faculty and fellow students.

Objectives:
- ability to integrate various perspectives, concepts and approaches that have been taught in the Public Health programme;
- ability to formulate implications of research projects for public health.

PU06: Public Health in Low and Middle Income Countries

Scheduled: Spring 2018
Faculty: *W. Stolk, PhD, Prof. O.H. Franco, MD PhD, Prof. A. Burdorf, ir, PhD and invited speakers*
ECTS: 3.0

This module aims to teach methods to assess the health of populations in low and middle income countries and to quantitatively evaluate the effects of interventions on population health. Students are taught use modern techniques as health impact assessment to predict changes in population health due to particular programmes, for example control programmes for infectious diseases.

This module will be given in conjunction with the institute for Health Policy and Management (iBMG).

After completion the student is able to:
- quantify population health by using population-based;
- measures of general health, based on life tables and related techniques;
- describe past trends and explore future developments in population health;
- assess the public health impact of intervention programmes through health impact assessment

SC01: English Language

Scheduled: Aug – Oct 2016
ECTS: 1.4

All international Master of Science students, whose native language is not English, are required to attend the two proficiency tests of English Language (SC01). Your level of English will then be determined and, if proven necessary, you will be registered for the entire course.
This course is given at the beginning of the study year in order to enhance your learning experience during the programme.

Objectives:
- to be able to complete the educational programme without major difficulties with the English language.

SC02: Introduction to Medical Writing

Scheduled: June 2017
Faculty: *A. Bless and I. Cressie*
ECTS: 2.0

During the second semester, full time Master of Science students will attend six workshops of three hours on how to write correct and readable scientific articles in English. Each student will be able to work on his or her own article, which the teacher will correct.

Students from institutes participating in of affiliated with NIHES, including PhD candidates at Erasmus MC, do not attend SC02.

Objectives:
- After the course students should be able to write correct and readable scientific articles in English.

SC07: Scientific Writing in English for Publication

Scheduled: Winter/Spring 2017
Faculty: *P. van Gelder*
ECTS: 2.0

'Writing to be read'

This course will focus on:
- communicating the point and importance of your research;
- writing a clear and readable scientific article.

The course consists of 4 half-day sessions and 3 writing assignments that will receive individual feedback from the instructor as well as other course participants. Attending all 4 sessions and completing all writing assignments is compulsory. The course will be intensive—writing takes time—so we suggest that participants reserve considerable time for this course.
Participants will be guided through the writing process in 3 assignments:
1. Clarifying the point of the research;
2. Completing the Hourglass Template with the main messages for the Introduction, Methods, Results, and Discussion of your research;
3. Writing the Abstract and Title.

Part of the work will be "peer reviewing". Participants will critically discuss each of the three assignments with a peer-review partner (i.e. another course participant). The remaining members of the peer-review group will review and critique each assignment as well. This implies that participants must be willing to work closely with a peer-review partner during the course and meet deadlines for peer reviewing. After revising texts based on these reviews, participants then send them to the instructor, who will provide both substantive and language tips.

Objective:
- To give participants the skills and tools needed to write credible, readable and citable research papers for publication in English. The participants receive individual feedback on a part of their own paper.

SC17: Courses for the Quantitive Researcher

Scheduled: Winter/Spring 2017
Faculty: *J.van Rosmalen, PhD, D. Rizopoulos, PhD, and S.P. Willemsen, PhD*
Prerequisites: Basic level epidemiology and biostatistics.
ECTS: 1.4

The aim of this course is to prepare Nihes MSc students for the more advanced statistical courses (i.e., Repeated Measurements, and Survival Analysis in the Erasmus Winter Programme, Bayesian Statistics, Missing Values in Clinical Research and Growth Models) by equipping them with the required knowledge of basic statistical concepts and statistical software.

The course consists of three parts:
- basic concepts in mathematics and statistics;
- introduction to the R statistical software and
- a brief introduction to the SAS language.

The first part covers essential concepts in statistics such as density and distribution function, types of distribution functions, integral calculations, differentiation, notions of matrix theory, optimization topics applied to likelihood and sampling. The second part, which is done in conjunction with the first one, introduces the R programming language that is used to perform data manipulations, graphics and statistical analyses. In the third part a brief introduction will be given of the SAS package with an emphasis on basic data manipulations.

Objective:
- at the end of the course the student will be equipped with the required knowledge of basic statistical concepts and statistical software to successfully complete the advanced statistical courses.