

Assessment report
Limited Programme Assessment

Master in Health Sciences
CROHO nr 75042

Erasmus University Rotterdam

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1. Executive summary

In this executive summary, the panel presents the main considerations which have led to the assessment of the quality of the Master in Health Sciences programme of Erasmus University Rotterdam, having been assessed according to the Assessment Framework (22 November 2011) of NVAO (Nederlands-Vlaamse Accreditatie Organisatie).

The programme management has taken up the suggestions for improvement made by the panel that conducted the initial accreditation of the programme in 2008. In particular, students are now assigned a tutor as early in the programme as possible. If student experience difficulties in choosing a research topic for the master's thesis, the advisor education of the MSc programme will assist. In addition, focus groups as an extra method for evaluating the courses have been implemented. Moreover, the current study guide now provides more detailed information on the relation between the intended learning outcomes of the programme and the courses as well as on the learning goals and contents of the courses. Finally, the programme management is in the process of obtaining detailed information about the careers of the alumni.

The panel considers the programme's objectives to be up-to-date, to meet the international requirements and to be highly ambitious. The programme management monitors the objectives and the intended learning outcomes closely in order to keep these up-to-date and to keep these in line with the dominant international developments in the field. Graduates of each of the specializations which are offered, will achieve these learning outcomes. The learning outcomes of the programme resemble those of a number of renowned schools abroad. The programme management monitors the learning outcomes in order to keep these in line with the requirements of the professional field. They, also, meet the requirements of the Dutch Epidemiology Society (Nederlandse Vereniging voor Epidemiologie). The panel considers the learning outcomes to comply fully with the requirements of a master's level programme.

The entry requirements for the programme are relevant and the selection criteria are applied very strictly, allowing only the most talented and most motivated students in. The part-time and full-time study modes of the programme accommodate various groups of students, including students who combine the master programme with a (e.g. clinical) job.

The panel considers the curriculum to be of an excellent quality, to be very well-organized and to cover relevant topics on a scientifically advanced level. The students are taught in-depth knowledge and understanding of the topics presented and methodological, research and communicative skills. The panel suggests introducing a course on research ethics to further optimize the curriculum. The compulsory and recommended literature for the programme matches the programme's requirements. The relationship between the curriculum and the scientific research is very strong, as the students gain first-hand information about internationally high-ranking research projects. The international dimension of the programme is impressive. As a substantial percentage of the lecturers come from abroad and nearly all the lecturers are involved in international research projects, the students become acquainted with the international state-of-the-art of the subject matter being taught. A substantial number of students come from abroad allowing the students to discuss and exchange perspectives from different countries on the subject matter lectured.

The lecturers in the programme are excellent researchers, having the qualities to teach the students on a scientifically advanced level. Their commitment and didactical qualities are appreciated by the students. New lecturers have been appointed, some of them former students of the MSc programme, contributing to the continuous development of the programme. The panel supports, nevertheless, the intention of the programme management to raise the number of BKO-(and SKO-) certified lecturers and advises the programme management to organize tailored opportunities to further optimize the educational excellence of individual teachers.

The students have ample opportunity to design the programme of their preference. The coherence of the curriculum is ensured by the prerequisites for each of the courses and the assistance of the tutors in designing the curriculum. The programme is demanding, including courses which require substantial effort on the part of the students but, in the opinion of the students, doable. The information about the programme provided for the students and the study guidance are appropriate. The housing and the material facilities of the programme are up-to-date and very suitable for the learning processes of the students.

The examination methods of the courses meet the learning objectives. The formative assessments in the courses are positive, as these contribute to the learning processes of the students. In some of the introductory and advanced courses the attendance rate is the only examination method used. The panel advises the programme management to apply other examination methods for these courses. This has already been partly implemented by the programme management. The assessment policy of the programme is adequate, albeit rather concise, and the examination board is in place. The panel recommends the programme management to draft a more elaborate assessment policy and to intensify the quality assurance monitoring by the examination board. The panel has no doubts concerning the quality of the assessment procedures for the master's thesis but would, however, encourage the programme management to make the process more transparent and to formalize the independent assessment by the second examiner. The panel regards the quality of the master's theses to be excellent and the level of the theses to be very high. Of the theses of the students who graduated in 2009, 47 out of 56 (about 84 %) have been published in international peer-reviewed journals. In nearly all of these publications the student was listed as the first author of the article. Also, the graduates tend to pursue interesting careers and acquire prominent positions.

The panel has found a strong consensus at all levels, the dean, the programme management, the lecturers and the students, about the objectives, the design and the importance of the programme. In the opinion of the panel, this aspect adds to the strengths of the programme.

The panel has assessed each of the standards of the NVAO Assessment Framework for the Master in Health Sciences programme of the Erasmus University Rotterdam as excellent. Therefore, the panel advises the NVAO to re-accreditate the Master in Health Sciences programme of the Erasmus University Rotterdam and to assess this programme to be excellent.

Rotterdam, 20 March 2013

Chair of the assessment panel
Prof. A.W. Hoes MD, Ph.D.

Secretary
W.J.J.C. Vercouteren MSc, RC

2. Assessment process

Certiked VBI has received a request to conduct an assessment for the re-accreditation of the Master in Health Sciences programme of Erasmus University Rotterdam.

Certiked has requested the approval by the NVAO of the proposed panel of experts to conduct this assessment. NVAO has given their approval. The panel consisted of (for more detailed information please refer to Annex 4: Composition of the assessment panel):

- prof. A.W. Hoes MD, Ph.D., panel chair, professor of Clinical Epidemiology and General Practice, and Chair of the Julius Center for Health Sciences and Primary Care
- prof. J. Weyler MD, Ph.D., panel member, professor of Epidemiology and Medical Statistics, Faculty of Medicine and Health Sciences, Antwerp University
- M. van Houdenhoven Ph.D., panel member, executive board member and chief financial officer of Haga Hospital, the Hague
- C. Saris BSc, student member, student research master Health Sciences, track Social Sciences, Maastricht University

On behalf of Certiked, W. Vercouteren MSc, RC was responsible for the process co-ordination and for drafting the panel's report. All the panel members and the secretary have signed a statement of independence and confidentiality.

The panel has conducted this assessment on the basis of the standards of the NVAO Assessment Framework (22 November 2011).

The following procedure has been adopted. The members of the panel studied the documents presented beforehand by the programme management, including a number of theses (please refer to Annex 2 and 3: Documents reviewed and Theses reviewed). As the programme is offered in a full-time as well as a part-time study mode and as the part-time programme in terms of the number of students is about two times the full-time programme, 15 theses of part-time students and 8 theses of full-time students have been selected. The theses were selected randomly in prespecified strata of grades, to ensure a fair distribution of grades.

Prior to the site visit, every one of the panel members and the process co-ordinator/secretary discussed their findings and preliminary considerations concerning the quality of the programme. The panel members presented a number of questions to be put to the programme representatives during the site visit. On the basis of this input, the secretary has drawn up a complete list of questions.

On February 4, 2013 the panel conducted a site visit at the premises of the programme on the campus of Erasmus University Rotterdam. The site visit was conducted in accordance with the schedule drawn up beforehand (please refer to Annex 1: Schedule of site visit). The programme management communicated the open office hours to the lecturers, the students and other persons involved in the programme. No one presented themselves during the open office hours.

Immediately after the site visit the members of the panel shared their considerations for each of the standards of the NVAO Assessment frameworks for the higher education accreditation system Programme assessment (limited). These considerations were based on the findings during the site visit, building upon the evaluation of the documents submitted by the institution. Finally, the chair of the panel presented a broad outline of the findings to the representatives of the programme.

A draft version of this report was finalised by the secretary, taken into account the information presented as well as the findings and considerations of the panel. The draft report was then sent to the members of the panel. The panel members corrected and amended the draft report. Finally, the secretary drew up the final report. This report was sent to the programme management to correct for errors. After having corrected the errors, the report was sent to the programme management to accompany their request for re-accreditation.

3. Overview of the programme

3.1 Basic information about the programme

Administrative information about the programme:

| | |
|----------------------------------|---|
| Name programme as in CROHO: | M Health Sciences |
| Orientation and level programme: | Academic Master |
| Grade: | Master of Science |
| Number of credits: | 70 EC |
| Four specializations: | Epidemiology Clinical Epidemiology Genetic Epidemiology Public Health |
| Location: | Rotterdam |
| Mode of study: | Full-time (13 months) Part-time (spread over two years) Part-time (spread over three consecutive summers plus fall and/or winter/spring sessions) |
| Registration in CROHO: | 75042 |

Administrative information about the institution

| | |
|---------------------------------------|------------------------------|
| Name of institution: | Erasmus University Rotterdam |
| Status of institution: | publicly funded university |
| Institution's quality assurance test: | conditionally positive |

Quantitative data about the programme

The number of students who enrolled in the programme was 46 in 2009, being divided in 14 full-time students and 32 part-time students, 77 in 2010, from whom 38 were part-time students and 39 full-time students and 58 students in 2011, being 22 full-time students and 36 part-time students.

Percentage of students who have completed the programme in two years

| Cohort | 2008 | 2009 | 2010 |
|------------------------|--------|--------|--------|
| Percentage of students | 60,9 % | 58,7 % | 76,6 % |

A substantial number of students are Ph.D. candidates. They often study part-time, combining this programme with their Ph.D. research or with a clinical specialization, and, therefore, take more than two years to complete the programme. So, the figures underestimate the real completion rate.

Percentage of lecturers with the following qualifications

| Qualification | Master's degree | Ph.D. | BKO |
|-------------------------|-----------------|-------|------|
| Percentage of lecturers | 100 % | 90 % | 15 % |

Since 2010, newly appointed lecturers have to obtain a BKO-certificate (BKO is Dutch for Basic Teacher Qualification). Most lecturers in the programme are very experienced and were appointed before 2010. Therefore, they have not obtained a BKO-certificate. Nevertheless, the programme management intends to raise the percentage of BKO- and SKO- (Senior Teacher Qualification) certified lecturers.

Since the courses are taken by students of different master's programmes of NIHES (Netherlands Institute for Health Sciences), the student-to-teacher ratio has been calculated for all of these programmes together. Course teaching in these programmes amounts to 1.8 fte (3,000 hours per year), whereas for guidance and supervision during the research projects 2.95 fte (4,900 hours) are available. In total, the fte's for lecturing and guidance, therefore, is 4.75 fte. The number of students in these master's programmes is about 70 per year. So, the students-to-teacher ratio is about 14.7 to 1.

The number of contact hours ranges from 20 hours per week for the periods in which the courses are given to 2 hours per week for the research training periods. The hours in the research training are, mainly, hours of one-to-one contact between the student and the tutor.

3.2 Main facts about the institution

The post-initial degree programme Master in Health Sciences is a programme of NIHES. NIHES is a centre for quantitative research and postgraduate education in medicine and health sciences. Founded by Erasmus University Rotterdam, NIHES is an alliance of Erasmus Medical Center Rotterdam (Erasmus University Rotterdam), Academic Medical Center Amsterdam (University of Amsterdam), Netherlands Cancer Institute (NKI) and the National Institute for Public Health and the Environment (RIVM). NIHES offers a number of degree programmes as well as a number of short courses. The degree programmes are the Research Master in Health Sciences (120 EC), the Research Master in Clinical Research (120 EC) and the Master in Health Sciences (70 EC). Whereas the former two programmes are meant for students having completed a bachelor's degree, the latter is a post-initial programme at a postgraduate level for students with either a master's degree or with experience as a health professional. The aim of NIHES is to prepare students for international careers as researchers, executives or advisors in the medicine and health sciences field.

According to its website, the Erasmus University Rotterdam is a research university, driven by a strong focus on current social issues. The university concentrates its expertise on issues of management, organization and policy in the public and private sectors on the one hand, as well as on the field of health care and medicine. Erasmus University Rotterdam has bundled its education and research in four areas of expertise in which the university has a national and international reputation to maintain: health, wealth, governance and culture.

In its own words, the principal tasks of Erasmus University Rotterdam are the generation and transfer of knowledge proceeding from a high degree of social engagement. To this end, the university pursues knowledge in an inquiring, critical, investigative and flexible manner, with a strong international orientation and based on the values of professionalism, teamwork and fair play.

The research and lecturing activities of the Erasmus University have been concentrated in the Erasmus School of Economics, Erasmus School of Law, Faculty of Social Sciences, Faculty of Medicine and Health Sciences/Erasmus Medical Centre, Faculty of Philosophy, Erasmus School of History, Culture and Communication, Rotterdam School of Management and International Institute of Social Studies.

3.3 Intended learning outcomes

The students who have completed the post-initial Master in Health Sciences programme, are to have mastered the following learning outcomes.

- 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 analyze 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, discussions 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.

3.4 Outline of the curriculum

In the table below the courses included in the curriculum are presented .

| | |
|--|---------|
| <i>Epidemiology, Clinical Epidemiology, Genetic Epidemiology</i> | |
| Introductory courses Erasmus Summer Programme | 4.2 EC |
| Core courses: Study Design and Biostatistical Methods I: Basic Principles | 10.0 EC |
| Programme-specific courses | 11.4 EC |
| Advanced courses | 8.5 EC |
| Skills courses | 2.5 EC |
| Research (including proposal and oral presentation) | 33.4 EC |
| Total credits | 70.0 EC |
| <i>Public Health</i> | |
| Introductory courses Erasmus Summer Programme | 4.2 EC |
| Core courses: Study Design and Biostatistical Methods I: Basic Principles | 10.0 EC |
| Programme-specific courses | 11.4 EC |
| Advanced courses | 9.1 EC |
| Skills courses | 2.5 EC |
| Research (including proposal and oral presentation) | 32.8 EC |
| Total credits | 70.0 EC |
| <i>Clinic and Public Health Genomics (subspecialization of Genetic Epidemiology)</i> | |
| Introductory courses Erasmus Summer Programme | 4.2 EC |
| Core courses: Study Design and Biostatistical Methods I: Basic Principles CC02 | 10.0 EC |
| Programme-specific courses | 5.7 EC |
| Advanced courses | 14.2 EC |
| Skills courses | 2.5 EC |
| Research (including proposal and oral presentation) | 33.4 EC |
| Total credits | 70.0 EC |

4. Overview of the assessments

The programme management offers a full-time programme as well as a part-time programme. These programmes are essentially the same and only differ in scheduling and duration.

| Standard | Assessment |
|---|------------|
| Standard 1. Intended learning outcomes | Excellent |
| Standard 2: Teaching-learning environment | Excellent |
| Standard 3: Assessment and achieved learning outcomes | Excellent |
| Programme as a whole | Excellent |

5. Findings, considerations and assessments per standard

5.1 Standard 1: Intended learning outcomes

The intended learning outcomes of the programme have been concretised with regard to contents, level and orientation; they meet international requirements.

Findings

The programme management aims to teach students to become quantitative health sciences researchers. The graduates are to be able to formulate a relevant scientific research question, to perform a thorough literature study, to design a research protocol, to know how to acquire, to process and analyze data and to arrive at a conclusion and a judgement, reflecting their scientific and social responsibilities. In addition, the graduates should be able to present their findings and conclusion orally and in writing. The programme management expects the graduates to submit their master's thesis to an international peer-reviewed journal.

The intended learning outcomes which the programme management has drafted and which are listed in paragraph 3.3 of this report reflect the objectives of the programme. The learning outcomes were drafted for the first time in 1994, at the start of the programme. The programme management has kept these up-to-date ever since.

The programme management has drawn up the domain-specific requirements for the health sciences field. Health sciences is, according to this text, a broad and multidisciplinary field encompassing biomedical, psychosocial, organizational and societal aspects of health, diseases and health care. The programme focuses on epidemiological research methods which are applied to a wide range of patient populations as well as to the population at large.

The programme offers the specializations Epidemiology, Clinical Epidemiology, Genetic Epidemiology (including the subspecialization Clinical and Public Health Genomics) and Public Health. In 2008, at the time of the initial accreditation, two specializations, Medical Informatics and Health Services Research, were offered. These have been removed. The subspecialization Clinical and Public Health Genomics, will not be offered, from 2013 onwards. In the future, two more specializations will be added, Medical Psychology and Pharmacoepidemiology. The programme management feels these two specializations fit well into the programme set-up. The intended learning outcomes apply to each of these specializations.

The programme management has compared the programme's learning outcomes to the international standards in this field. NIHES, being responsible for the programme, was evaluated in 2007 by a committee of international experts on behalf of the Royal Netherlands Academy of Arts and Sciences (KNAW). This committee assessed the NIHES research school excellent in all aspects. The programme was judged to be comparable to similar programmes of the London School of Hygiene and Tropical Medicine (UK), the Harvard School of Public Health (USA) and the Johns Hopkins Bloomberg School of Public Health (USA). The learning outcomes of these institutions have been taken into account in drafting the learning outcomes of this programme. The lecturers in the programme participate in important international scientific projects, reflecting the state of the art in this field.

There is a strong relationship between the programme and professional practice. Most of the graduated students from the Netherlands register officially as Epidemiologist A or Epidemiologist B at the Dutch Vereniging voor Epidemiologie (Netherlands Epidemiological Society). The programme meets the requirements for this registration. The professors of NIHES require all their Ph.D. candidates to complete this programme. The intended learning outcomes of the programme, therefore, ought to meet these professors' requirements. The requirements for graduates entering policy or advisory positions in the professional field are, also, taken into account.

The programme management has drafted a table comparing the intended learning outcomes to the Dublin descriptors. From this table can be derived that the learning outcomes meet the Dublin descriptors and, therefore, meet the master's level.

Considerations

The panel considers the programme's objectives to be up-to-date, to meet the international requirements and to be highly ambitious. The intended learning outcomes meet these objectives in an appropriate way. The programme management monitors the objectives and the intended learning outcomes closely in order to keep these up-to-date, remaining in line with the dominant international developments in the field.

In the opinion of the panel the intended learning outcomes apply to all of the specializations the programme offers. Graduates of each of these specializations will achieve these learning outcomes.

The comparison with the intended learning outcomes of renowned schools in other countries has been performed by the programme management. The learning outcomes of the programme resemble the learning outcomes of these schools. Also from this perspective, the learning outcomes meet the international requirements.

The learning outcomes are being checked regularly against the requirements of the professional field. Representatives of the scientific community and representatives from professional practice are regularly asked to express their opinion about the relevance of the learning outcomes. They, also, meet the requirements of the Netherlands Epidemiological Society. The programme management monitors the learning outcomes in order to meet these professional requirements.

From the comparison of the intended learning outcomes to the Dublin descriptors the panel has been able to deduce that all of the Dublin descriptors are represented in the learning outcomes. The panel considers the learning outcomes to comply fully with the requirements of a master's level programme.

Assessment of this standard

These considerations have led the assessment panel to rate the standard 1 *Intended learning outcomes* as excellent.

5.2 Standard 2: Teaching-learning environment

The curriculum, staff and programme-specific services and facilities enable the incoming students to achieve the intended learning outcomes.

Findings

The number of students enrolled in the programme was 46 in 2009 (14 full-time students and 32 part-time students), 77 in 2010 (38 part-time and 39 full-time students) and 58 students in 2011 (22 full-time and 36 part-time students). About 30 % of the students come from countries outside the Netherlands.

Approximately 60 % of the students have an appointment at one of the participating institutions in NIHES and are Ph.D. candidates. These students take the courses of the programme in order to prepare themselves for the quantitative health sciences research included in their dissertation. About 50 % to 60 % of the students admitted to the programme have completed their master's programme in medicine.

The students enrolling in the programme have to go through an intake procedure, to check whether they meet the entry requirements. The students have to have at least a bachelor's degree but preferably a master's degree in disciplines such as medicine, dentistry, veterinarian medicine, public health, health sciences, nutritional sciences, biology, pharmacy, environmental sciences, social sciences or economics. Secondly, they have to demonstrate a good command of the English language, to be assessed by a satisfactory IELTS- or TOEFL-score. The applicants are to send their resume, their motivation to enroll in the programme and two letters of recommendation. The admissions committee, consisting of the advisor education and the programme director of the specialization the student applies for, perform the selection. The entry requirements are applied quite strictly, aiming to allow only the students in, who are able to complete the programme. About 60 % of the applicants are admitted. The number of student entering the programme with a bachelor's degree is negligible.

The programme management offers a full-time programme as well as a part-time programme. The part-time programme includes two different schedules, a two-year schedule and a schedule spread over three summers. These study modes are offered to accommodate various groups of students. The part-time programmes are, especially, meant to meet the demands of students who intend to combine their studies with a job. The curriculum depends on the student's specialization programme. For any of the specializations, the curricula for the full-time students and the part-time students are the same. Only the schedules differ. The curricula are divided in a first part, mainly consisting of courses and a second part, mainly devoted to the research project, leading to the master's thesis. For the full-time and part-time students the schedules are as follows.

- The full-time students have a schedule of 13 months, beginning in the summer with a number of introductory courses, partly tailored to the specialization of the student's choice. These courses are, mainly, meant to provide an introduction into the health sciences and are an introduction to the courses later in the curriculum. The first semester, also, includes two compulsory core courses meant to acquaint the students with traditional and more modern design concepts and with classical and basic statistical techniques for the analysis of medical research data. In the first semester the students take a number of compulsory programme-specific courses which depend on the student's specialization. In the second semester the students are required to write their thesis. In this semester they, also, take advanced courses and several skills courses. The advanced courses may be compulsory courses or electives, depending on the specialization.

- The part-time students either have a schedule of two years or a schedule of three summers and two winter/spring periods and/or a fall period. These students start the curriculum with the introductory courses in their first summer. In the first year, they take the compulsory core course Study Design and the compulsory programme-specific courses as an introduction to their specialization. In the second summer, the students take biostatistical courses. They continue, in the second year, with their master's thesis and with the advanced and skills courses. They finish their programme in the third summer, taking a number of (compulsory or elective) advanced courses.

The curriculum meets the intended learning outcomes. All the students are offered introductory courses at the beginning of the programme to bring any one of the students at the required level. These introductory courses address the principles and methods of applied quantitative research in medicine and the health sciences. In the compulsory core courses (Study Design and Biostatistical Methods I) the students acquire knowledge and insights regarding the theory of study design and regarding the principles and methods of data analysis. The compulsory programme-specific courses introduce the students to the knowledge and insight in the subject matter of their specialization. The students take advanced courses to deepen their knowledge of specific subjects. The skills courses some of which are compulsory and others are strongly recommended, include Introduction to Medical Writing, English Language (if necessary) and Courses for the Quantitative Researcher. The students apply the knowledge and insights in group discussions and assignments in the courses and during their writing of the master's thesis. The students are also required to make judgements in the courses as well as in their research group in the second part of the programme. In this research group they discuss with their fellow-students and with their tutors the literature they are using, the design of their research project and the results of their data analyses. The students acquire communication skills in some of the skills courses and in writing the research proposal for their master's thesis, in presenting their research project and in writing their master's thesis. For the specialization Public Health in the Integration Module, they, also, are taught to present findings and proposals to the authorities.

The lecturers in the programme are high-ranking academics, holding a professorship or a Ph.D. degree and participating in internationally highly regarded research projects. These projects are important projects for the advancement of epidemiological research. The lecturers are, mostly, researchers at the NIHES research school and have published widely in top international journals. A number of lecturers in the programme are working as a lecturer at Harvard School of Public Health (USA). Close research relationships exist between NIHES and the London School of Hygiene and Tropical Medicine, Johns Hopkins Bloomberg School of Public Health (USA), Karolinska Institutet (Sweden) and the University of Bern (Switzerland). As has been indicated in paragraph 3.1 of this report, the number of lecturers with a BKO-certificate is 15 %, mainly because most lecturers have been working at NIHES for a considerable time and were not obliged to obtain a BKO-certificate. The programme intends to raise this number as well as the number of lecturers with a senior qualification (SKO). The students whom the panel has interviewed, regarded the lecturers as being inspiring, committed and of high quality. The lecturers tend to adapt their courses in response to the feedback of the students. Lecturers who have disappointing evaluation results are removed from the programme.

The educational principles of the programme are, among others, to foster the active and self-guiding role of the students, to teach in small groups, to present the students with knowledge and skills, to ensure that the students are acquainted with the international dimension of the field, by studying with students from other countries as well as being lectured by international lecturers. In the courses of the first part of the curriculum, the students are offered a wide variety of teaching methods, including lectures, seminars, (that are more interactive than lectures), explanations in small groups, group discussions, group assignments, individual assignments, individual presentations, exercises and reading assignments. In the research group in the second part of the curriculum, the main teaching methods are group discussions and individual presentations.

The curriculum students may, to a large extent, design their own curriculum, choosing the electives that match their specific interest, their specialization and their research project. The students, however, have to present their curriculum for approval. The student's tutor balances the aspirations of the students and the coherence of the programme the student wants to choose. For most courses entry requirements are set. The lecturers receive feedback on overlap and inconsistencies of their courses. They discuss and reduce these inconsistencies. The programme directors, responsible for each of the specializations, meet regularly to discuss the programme, including students' feedback.

The study load of the programme is 70 EC. There are no classes on Wednesdays during the first semester to allow the students to prepare for the classes and to do their homework. The students have a total of three opportunities to pass an examination. In extraordinary situations, when a student does not pass after these three times, the science director and the examination board may decide whether the student is allowed to stay in the programme. The examinations are, mostly, preceded by a week to prepare for these. The part-time students may spread their programme over a longer period of time. They are, however, to make a study plan with the advisor education. The students that talked to the panel consider the programme to be demanding but doable and the examinations to be manageable within the allotted time. The lecturers whom the panel has interviewed, assess the programme to be quite demanding for the students and the study intensity to be very high.

In the study guide, the students are informed about the schedule of classes and examinations and the learning goals and contents of the courses. The study progress of each of the students is monitored by the advisor education of the programme. The advisor meets with the students to discuss their programme. During the first semester, as soon as the student has chosen the subject matter of his or her research project, the programme director suggests a tutor who is an expert in this field. The tutor supervises the student's research project as well as the courses the student takes in the second part of the programme and monitors the student's progress.

The programme is located at the Erasmus Medical Center in the education center which was entirely renewed in 2012. This education center has 34 classrooms, two large lecture rooms, computer rooms, rooms for self-study and a medical library. The classrooms and lecture rooms have all the facilities needed for the teaching purposes.

The programme management takes care of evaluating the courses. In case of unsatisfactory results, these results are discussed more in-depth in student focus groups. The results are, also, discussed with the course co-ordinator and improvement measures may be taken.

Considerations

The panel considers the entry requirements for the programme to be very relevant for the programme. The selection process is applied very strictly, allowing only the most talented and most motivated students in which, in the opinion of the panel, is an important prerequisite for the learning outcomes the students will achieve. The part-time and full-time study modes the programme offers, are regarded positively by the panel, as various groups of students, including students who combine the MSc programme with a job, are accommodated.

The panel considers the curriculum to be of an excellent quality, meeting the intended learning outcomes for each of the specializations and covering the relevant topics on a scientifically advanced level. The students are taught the various aspects of doing research in the health sciences. The students are given ample opportunity to gain an in-depth knowledge and understanding with regard to the topics presented in the courses and are, also, taught methodological, research and communicative skills to apply this knowledge and understanding. The panel would, however, suggest introducing a course on research ethics in the curriculum. The relationship between the contents of the curriculum and the scientific research is very strong, as the students gain first-hand information about internationally important research projects. The panel considers the literature which is prescribed, to be very appropriate for the programme.

The international dimension of the programme is considered by the panel to be very strong. On the part of the lecturers, a substantial percentage of them come from abroad and nearly all the lecturers are involved in international research projects. The students, therefore, are acquainted with the international state of the art of the subject matter which is being taught. A substantial number of students come from abroad allowing the students to discuss and exchange perspectives from different countries on the subject matter lectured.

The panel has a high regard for the lecturers in the programme. They are excellent researchers and are in a good position to teach the students on a scientifically advanced level. Their commitment and educational qualities are appreciated by the students. The panel has observed new lecturers being appointed, thereby contributing to the continuous development of the programme. The panel supports, nevertheless, the intention of the programme management to raise the number of BKO- (and SKO-) certified lecturers.

Although the students have ample opportunity to design the programme of their preference, the coherence of the curriculum remains very appropriate. The prerequisites for the courses and the assistance of the tutors provide assurances for this coherence. The programme is very demanding (but doable), not only being 70 EC but also including courses which require substantial effort on the part of the students.

The panel considers the information about the programme provided for the students and the study guidance to be appropriate and to meet the requirements.

The panel is impressed about the housing and the material facilities of the programme. These are very up-to-date and very suitable for the learning processes of the students.

Assessment of this standard

These considerations have led the assessment panel to assess the standard 2 *Teaching-learning environment* to be excellent.

5.3 Standard 3: Assessment and achieved learning outcomes

The programme has an adequate assessment system in place and demonstrates that the intended learning outcomes are achieved.

Findings

In all of the courses, formative tests, for example individual or group assignments, are included. The programme management has introduced these formative tests to support the learning processes of the students as well as the summative, concluding assessments at the end of the courses.

The examinations for the courses consist either of essay questions on published research papers or analyses of these papers or a mix of multiple choice questions and essay questions and/or written assignments or a (group) presentation. The students are to complete the compulsory core courses and the compulsory programme-specific courses with a written examination. A satisfactory grade for these assessments is required to be able to continue with the programme. Some of the introductory courses and advanced courses include formative tests but are assessed by means of course attendance. The course attendance is strictly monitored. The programme management is, however, considering other examination methods such as a portfolio, to assess the students' capabilities.

The programme management has drafted an assessment policy and an assessment plan. The assessment policy indicates very concisely the main quality issues regarding the examinations. In the assessment plan for each of the specializations and each of the study modes (part-time and full-time) the compulsory courses and electives with the number of EC and the examination modes per course are listed, thereby stating the requirements the students have to meet. The students have to attain a satisfactory grade (at least 5.5) for each of the courses to be able to graduate.

The examination board of the graduate school of the Erasmus Medical Center consists of representatives of each of the research master programmes. The chair of the examination board is the representative of this MSc programme. The examination board meets once per year. The representative for the programme is to monitor the quality of the examinations and the procedures for the programme. This representative also grants exemptions, although the exemption policy is very restrictive. The quality assurance procedures the examination board has adopted are not very elaborate. The Erasmus Medical Center is in the process to install an examination board for the entire medical school and to intensify the quality assurance monitoring.

For their research project, leading to the master's thesis, the students are assigned a tutor. This tutor is an expert on the subject matter the student has chosen for his or her research project. The tutor may be an assistant professor but he or she will always be working under the authority of an associate professor or a full professor. Before entering upon their research project, the students present their research proposal, specifying the objectives, study design, data-collection procedure, data-analysis procedure and time schedule. The research proposal has to be approved by the tutor. The students are required to present their research project to their tutor's research group. The tutor assesses the master's thesis, taking into account a number of criteria such as the student's grasp of the literature, the problem statement, research question, analysis, interpretation and presentation of the results. In grading the thesis, the tutor takes into account the self-guidance and the level of independency of the student's work.

The second assessor of the master's thesis is the science director of the programme or the programme director of the student's specialization, but this assessment is not as extensive and formal as the one from the first assessor.

Several graduates of the programme found rather prominent positions within the programme itself, within the Erasmus Medical Center or outside of this institution. The panel has seen quite a number of examples.

Considerations

For the panel, the examination methods the programme management has chosen, are valid methods which meet the learning objectives of the courses. The panel judges the formative assessments in the courses as very adequate, as these indeed, as the programme management intends, contribute to the learning processes of the students. The panel agrees with the programme management's intentions to find other examination methods than attendance rates to conclude some of the introductory and advanced courses.

The assessment policy of the programme is adequate, albeit rather concise, and the examination board is in place. The panel recommends the programme management to draft a more elaborate assessment policy and to intensify the quality assurance monitoring by the examination board.

The panel has no doubts concerning the quality of the assessment procedures the programme management has adopted for the master's thesis. Nevertheless, the assessment process is not very transparent for the panel, as the tutor does not give a structured report on the student's performance and does not use a list of criteria and the second examiner does not formally assess the thesis independently from the tutor's assessment. The panel encourages the programme management to raise the transparency of this process and to ensure the second examiner giving a formal and more independent assessment.

The panel regards the quality of the master's theses to be excellent and the level of these theses to be very high. Of the theses of the students who graduated in 2009, 47 out of 56 (about 84 %) have been published in international high-ranking peer-reviewed journals. In nearly all of these publications the student was listed as the first author of the article.

The current prominent positions of a number of the former graduates in the faculty of this MSc programme, other departments at Erasmus University or at other universities, are evidence for the panel of the excellent capabilities of the graduates of the programme.

Assessment of this standard

The considerations have led the assessment panel to assess standard 3 *Assessment and achieved learning outcomes* to be excellent.

Annex 1: Schedule of site visit

Rotterdam, 4 February 2013

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|---------------------|--|
| 08.30 h. – 09.30 h. | Arrival and deliberations panel (closed session) |
| 09.30 h. – 10.00 h. | Dean and science director prof. H.A.P. Pols. MD, Ph.D. (dean of Erasmus Medical Centre and vice-chair of the Board), prof. A. Hofman. MD, Ph.D. (scientific director of Master Health Sciences programme) |
| 10.00 h. – 11.15 h. | Programme management prof. A. Hofman. MEd Ph.D. (scientific director of Master Health Sciences programme and programme director specialization Epidemiology), prof. A. Burdorf, Ph.D. (programme director specialization Public Health), A. Bout-Tellegen, Ph.D. (NIHES co-ordinator), M. Nuijten MSc (advisor education) |
| 11.30 h. – 12.30 h. | Programme directors, teachers and tutors prof. C.M. van Duijn, Ph.D. (programme director specialization Genetic Epidemiology and teacher/co-ordinator of ESP29, ESP43 and GE03), prof. H. Boersma, Ph.D. (teacher/co-ordinator of CC02), prof. O.H. Franco Duran, MD, Ph.D. (tutor and teacher of ESP45, CE02 and EP19), A. Dehghan, Ph.D. (tutor and teacher-co-ordinator CC01 and EP02) |
| 12.30 h. – 13.45 h. | Lunch, deliberations panel and documents review (closed session), including open office hours 12.15 h. – 12.45 h. |
| 13.45 h. – 14.30 h. | Chairman examination board and member programme management prof. J. Mackenbach, MD, Ph.D. (chairman examination board Research masters Erasmus Medical Centre), A. Bout-Tellegen, Ph.D. (NIHES co-ordinator) |
| 14.45 h. – 15.30 h. | Students and alumni, including members educational committee A. van Linge MSc (alumnus, specialization Clinical Epidemiology), S. Willems MSc (alumnus, specialization Genetic Epidemiology), A. Etman (student, specialization Public Health), E. van Lieshout, Ph.D. (student, specialization Clinical Epidemiology), R. Mutzel (student, specialization Epidemiology) |
| 15.30 h. – 16.30 h. | Deliberations panel and documents review (closed session) |
| 16.30 h. – 16.45 h. | Presentation of main findings by panel's chair to programme management |

Annex 2: Documents reviewed

The assessment panel has studied the following documents, presented prior to the site visit:

- Critical reflection of the one-year Master of Science programme in Health Sciences
- Structure of the organization of NIHES
- Discipline-specific reference framework
- NIHES research school accreditation
- Tables stating the learning outcomes per programme component
- Curriculum example
- Tables stating the teaching and study methods per course
- Overview of allocated staff with names, positions, scope of appointment, level and expertise
- Quality enhancement and teachers' education
- Assessment plan
- Assessment policy
- Tables stating the assessment methods per course
- Publications of the alumni of 2009
- Teaching and examination regulations
- Report on the institutional quality assurance assessment
- List of literature
- Study guide

On the day of the site visit, the programme management presented the following documents:

- Course descriptions
- Course material
- Examinations and assessments
- Course evaluations
- Initial accreditation report of 2008

Annex 3: Theses reviewed

The theses of the following part-time students have been selected for review by the panel

- 01
- 05
- 20
- 25
- 27
- 31
- 43
- 47
- 56
- 57
- 63
- 72
- 77
- 91
- 95

The theses of the following full-time students have been selected for review by the panel

- 03
- 12
- 37
- 65
- 69
- 80
- 94
- 106

Annex 4: Composition of the assessment panel

The assessment panel had the following composition:

- prof. A.W. Hoes MD, Ph.D., panel chair, professor of Clinical Epidemiology and General Practice, and Chair of the Julius Center for Health Sciences and Primary Care
- prof. J. Weyler MD, Ph.D., panel member, professor of Epidemiology and Medical Statistics, Faculty of Medicine and Health Sciences, Antwerp University
- M. van Houdenhoven Ph.D., panel member, executive board member and chief financial officer of Haga Hospital, the Hague
- C. Saris BSc, student member, student research master Health Sciences, track Social Sciences, Maastricht University

prof. A.W. Hoes MD, Ph.D., panel chair

Mr Hoes is, currently, professor of Clinical Epidemiology and General Practice and chair of the Julius Center for Health Sciences, University Medical Center Utrecht. In 1992, he obtained his Ph.D. He has been a full professor in the field of the health sciences since 1998. He is a member of the editorial board of a number of international journals as well as a member of various advisory boards in this field. Mr Hoes has been a (co-) promotor of numerous dissertations and has published widely.

prof. J. Weyler MD, Ph.D., panel member

Mr Weyler is, currently, professor of Epidemiology and Medical Statistics at the Faculty of Medicine and Health Sciences of Antwerp University and chair of the department of Epidemiology and Social Medicine. Since 1982, he is an associate professor and, since 1994, a full professor in Health Sciences and Epidemiology. He is a member of various scientific associations and professional organizations. He, also, is a member of the audit committee of the Netherlands Epidemiological Society. Mr Weyler has published numerous articles in the field.

M. van Houdenhoven Ph.D., panel member

Mr Van Houdenhoven is, currently, an executive board member of the Haga Hospital in The Hague as well as chief financial officer of the hospital. He has studied Economics at Tilburg University. Previously, he was a member of the board of Rivas Zorggroep in Gorinchem. He, also, has been employed by the Erasmus Medical Center. In 2007, Mr. Van Houdenhoven obtained his Ph.D. in the Health Sciences. The title of his dissertation was Health Care Logistics: the Art of Balance.

C. Saris BSc, student member

Ms Saris is, currently, a student of the research master Health Sciences, track Social Sciences, Maastricht University. From 2008 till 2011, she studied the bachelor Health Sciences, specializations Health Education and Promotion and Policy and Management of Maastricht University. Ms Saris was a member and vice-president of the education committee of the Health Sciences programmes, from 2010 till 2012.

Annex 5: Declarations of independence