



Accreditation Report

Master's Degree Programme
Management and Engineering in Production Systems

Provided by
Rheinisch-Westfälisch-Technische Hochschule
Aachen

Version: 06 December 2019

Table of Contents

A About the Accreditation Process.....	3
B Characteristics of the Degree Programme.....	4
C Peer Report	6
D Additional Documents	22
E Comment of the Higher Education Institution (22.08.2018)	23
F Summary: Peer recommendations (10.09.2018)	24
G Comment of the Technical Committee.....	26
Technical Committee 06 – Industrial Engineering (13.09.2018).....	26
H Decision of the Accreditation Commission (28.09.2018)	28
I Fulfilment of Requirements (28.06.2019).....	30
J Fulfilment of Requirements (06.12.2019).....	32
Appendix: Programme Learning Outcomes and Curricula	33

A About the Accreditation Process

Name of the degree programme	Labels applied for	Previous accreditation	Involved Technical Committees (TC) ¹
Master of Science in Management and Engineering in Productions Systems	AR ²	ASIIN, 2013-2018	06
<p>Date of the contract: 21.12.2017</p> <p>Submission of the final version of the self-assessment report: 15.05.2018</p> <p>Date of the onsite visit: 27.06.2018</p> <p>at: Aachen</p>			
<p>Peer panel:</p> <p>Prof. Dr. Dieter Beschorner, Universität Ulm;</p> <p>Dipl.-Wirtsch.-Ing. Martin Holzwarth, Unternehmensberater, Kaiserslautern;</p> <p>Prof. Dr. Christian Opitz, Zeppelin Universität, Friedrichshafen;</p> <p>Prof. Dr. Dirk Vogel, Hochschule für Technik Stuttgart</p>			
<p>Representative of the ASIIN headquarter: Dr. Martin Foerster</p>			
<p>Responsible decision-making committee: Accreditation Commission for Degree Programmes</p>			
<p>Criteria used:</p> <p>European Standards and Guidelines as of 15.05.2015</p> <p>Rules for the Accreditation of Study Programmes and for System Accreditation of the Accreditation Council as of 20.02.2013</p>			

¹ TC: Technical Committee for the following subject areas: TC 06 - Industrial Engineering.

² AR: Siegel der Stiftung zur Akkreditierung von Studiengängen in Deutschland

B Characteristics of the Degree Programme

a) Name	Final degree (original/English translation)	b) Areas of Specialization	c) Corresponding level of the EQF ³	d) Mode of Study	e) Double/Joint Degree	f) Duration	g) Credit points/unit	h) Intake rhythm & First time of offer	i) consecutive Master's Degree Programmes and Master's Degree Programmes providing further education	j) Study Programme Profile
Management and Engineering in Production Systems	M.Sc.		7	Full time	-	4 Semester	120 ECTS	WS / WS 2013/14	providing further education	Continuing Education

³ EQF = The European Qualifications Framework for lifelong learning

For the Master's degree programme Management and Engineering in Production Systems the institution has presented the following profile on the website (accessed 28 June 2018, <https://www.academy.rwth-aachen.de/en/education-formats/msc-degree-programmes/mme-ps>):

„Graduates with the skills to understand both the art of management and complex engineering processes are increasingly sought after in today's industrial world. The Master of Science in Management and Engineering in Production Systems is a unique program conducted as a cooperation between two European high level universities well-reputed in their specific fields. The German RWTH Aachen University holds one of the best faculties of mechanical engineering in the world and conducts the program's engineering part. The Dutch Maastricht School of Management (MSM) has a worldwide reputation for its programs in business and management teaching.

Our Engineering graduates...

- work at companies such as Anvis, BASF, Continental, Fiat, Ford, Kautex, Liebherr, Rolls Royce, Toyota, Volkswagen
- are very successful on the job market: half of our graduates find employment within a month of graduating and two thirds within three months
- increase their salary by more than 50% (about 40 %)

This M.Sc. program provides Basic education and professional foundation for industrial engineering specialists. Industrial engineers that stand out for their ability to integrate scientific principles, engineering knowledge, and management techniques for innovative problem solving.“

C Peer Report

Criterion 2.1 Qualification Objectives of the Study Programme Concept

Evidences:

- Self-Assessment Report
- Website (accessed, 23 July 218): <https://www.academy.rwth-aachen.de/en/education-formats/msc-degree-programmes/mme-ps>
- Diploma Supplement

Preliminary assessment and analysis of the peers:

For the Master's programme Management and Engineering in Production Systems (MEPS), the HEI presented a detailed description of general learning outcomes in the self-assessment report (SAR). All information are simultaneously presented on the programme's website online assuring that all stakeholders interested in the programme can easily access these information. A presentation of programme learning outcomes is also to be found in the Diploma Supplement. The peers approve that a detailed presentation of learning outcomes is given in the SAR in combination with a learning outcome matrix matching the described learning outcomes with the respective modules of the programme. Thus, it is clear that all students shall expand and deepen the knowledge obtained in a previous Bachelor's degree course in engineering in such a way that the graduates are capable of dealing with complex problems and are able to independently undertake scientific and research work. Special emphasis is laid on the conveyance of both engineering and management knowledge and skill as well as the development of soft skills such as presentation skills, intercultural competences, etc. Students shall be enabled to develop in-depth methodological and solution-driven engineering and management abilities by extending the basic analytical and technical knowledge of previous study degrees. On the basis of these qualifications, for the review team it is clear that graduates will be able to find work in managerial positions as well as further research that may be carried out in the form of a PhD programme.

In the production engineering part of the programme special focus lies on the aspects of modern Manufacturing Technologies and Resources, Production Planning issues, in particular on Integrated Processes and Product Design as well as Production and Quality Management. This is combined with the management part of the programme dominated by the topics Organizational and Institutional Development, International Project Management or Leadership and High Performance Teams. In conclusion, the peers see that the programme

pursues adequate skills and competences for academic research as well as practical elements for a professional career-building. However, during the discussions with programme coordinators the desire was expressed to develop the programme also into a more academic direction leaving to students both options open, if they want to return to a professional career or continue their studies in for of a PhD. As will be discussed under criterion 2.3 the peers emphasize, that the career-building usually is the central element of further education programmes and that for the fulfilment of more academic targets the programme would need to include more elements of scientific research. In case that the University would broaden the curriculum in future as described above the degrees' profile would need to be adapted. Given the strong international orientation of the programmes soft skills, intercultural and communicative competences are similarly integrated.

However, the peers emphasize that from the description of the learning outcomes it does not become clear in how far the programme relies on and builds upon the previous professional experience of the students. Since it is a programme of further education requiring at least one year of previous work-experience, it should be made clear in how far this experience is an element of the programme and made use of in order to enhance the students' already existing qualifications. Apart from this restriction the programme clearly is in accordance with the qualification profile level 7 (Master programmes) of the European Qualification Framework for lifelong learning.

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 2.1:

The peers consider this criterion to be predominantly fulfilled.

Criterion 2.2 (a) Conceptual Integration of the Study Programme in the System of Studies

The analysis and assessment of the requirements of the Framework of Qualifications for German Degrees is made within criterion 2.1, in the following detailed analysis and assessment of the compliance with the Common Structural Guidelines of the Länder as well as in connection with criterion 2.3.

Criterion 2.2 (b) Conceptual Integration of the Study Programme in the System of Studies

Evidence:

- Self-Assessment Report
- Website (accessed, 23 July 218): <https://www.academy.rwth-aachen.de/en/education-formats/msc-degree-programmes/mme-ps>

- Diploma Supplement
- A1_RWTH Examination Regulation_MME-PS
- On-site-discussions

Preliminary assessment and analysis of the peers:

Programme structure and duration:

According to §4 of the examination regulations the standard period of study for the Master's programme is three semesters but the peers learned during the on-site-visit and from the SAR that meanwhile the study duration was increased to four semesters. Apparently, this new regulation is already passed by the University administration but was not yet presented to the peers. They ask the coordinator to provide them with the currently valid examination regulation. According to the new regulation the programme comprises four semesters with a total of 120 ECTS credits and is completed by a Master thesis of 20 credits. Hence, the programme is in line with the German KMK requirements.

Entrance regulations:

Admission to the programme is regulated by §3 of the examination regulations. Accordingly, applicants need to have a first academic degree that proves that they possess the required previous knowledge for the programme. In order to fulfil this requirement the degree programme should comprise 120 credits of engineering and mathematical and natural sciences contents which are equivalent to a list of basic modules of the RWTH Aachen. If students lack any of these requirements, admission is possible under the condition that modules are made up for in the designated time. The decision about conditional acceptance is made by the examination committee. Since the programme is in English, sufficient English language competences of Level B2 are mandatory to be proven through, for example, TOEFL- IELTS- or Cambridge language tests. Furthermore, related professional work experience of at least one year is also required but the peers realize from §3(5) and students confirm this, that the Admission regulations except as working experience not only a qualified job activity but also practical experiences during the first academic degree. In fact, internships will be equally accepted as a precondition as those students that have gained job experience in the form of a dual Bachelor degree. This is seen critically by the peers as this regulation does not guarantee that all students possess enough professional experience on which programmes of further education need to rely according to the KMK regulations. Consequently, the peers recommend to review this part of the admission regulations and to ensure that the previous practical experience is adequate with all applicants.

Degree profile:

The University characterizes the study programme as application oriented which would seem reasonable to the peers since the students enter the programme already with a certain professional experience. But the peers realize that at the same time the SAR underlines the great importance of scientific research in the programme. During the discussions, it became clear that in the long run the programme coordinators envisage a two-track-programme where students may choose between a more research and a more practice oriented programme. However, at the moment it generally depends on the individual interest of each student. As outlined under criterion 2.1 the peers emphasize that the usual characteristic of a programme of further education is practice oriented and that in case the programme coordinators wanted to further strengthen the academic aspect in future, a revision of the programmes' profile would be required.

Consecutive or further education programmes:

As the programme requires a previous professional work experience of at least one year in addition to a first academic degree, the peers consent that the programme is one of further education.

Degrees:

The peers determine that only one degree is awarded at the end of the programme. Hence, the legal requirements of the German KMK are fulfilled.

Designation of degrees:

§1 of the examination regulations determines that at completion of the programme graduates are awarded the degree of "Master of Science". The Diploma Supplement provides detailed information about the study programme, composition of the final grade and the German system of higher education.

Modularization, Mobility and Credits:

Compliance with the "Framework Guidelines for the Introduction of Credit Point Systems and the Modularisation of Study Courses" of the programme is assessed within criterion 2.3 (modularization incl. module size), module descriptions, mobility, recognition), 2.4 (credit point system, student workload, exam load), and 2.5 (exam system: competence-oriented exam).

Criterion 2.2 (c) Conceptual Integration of the Study Programme in the System of Studies

The federal state of Northrhine-Westfalia has not issued any specific structural guidelines for the accreditation of Master degree programmes.

Criterion 2.2 (d) Conceptual Integration of the Study Programme in the System of Studies

No binding interpretations by the Accreditation Council must be taken into account at this point.

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 2.2:

The peers consider this criterion to be predominantly fulfilled.

Criterion 2.3 Study Programme Concept

Evidence:

- Self-Assessment Report
- Website (accessed, 23 July 2018): <https://www.academy.rwth-aachen.de/en/education-formats/msc-degree-programmes/mme-ps>
- A1_RWTH Examination Regulation_MME-PS
- A5_Module Handbook
- On-site-discussions

Preliminary assessment and analysis of the peers:

Study concept / implementation of learning outcomes:

The study concept has been modified compared to the previous accreditation and the number of semesters was increased from three to four. Generally, the programme should be studied in full time. The peers assess the present curriculum with a view to the envisaged programme learning outcomes.

The Master's programme MEPS is more or less equally divided into an Engineering part (nine modules) and a Management part (ten modules). In addition, all students have to pass a soft skills module in the first semester, and write a Master thesis in the fourth semester either with an engineering or a management focus. All engineering modules as well as three management modules in the first two semesters are provided by the RWTH Aachen. In the third semester all students attend six management modules provided by the Maastricht School of Management (MSM). While, originally, the programme coordinators presented the programme as a joint degree of RWTH and MSM discussions revealed that basically, the programme is a purely RWTH one with a mandatory mobility semester where students attend the MSM courses of which it is made certain that the RWTH will later recognize them and award the credits accordingly. Nevertheless, theoretically students could

also use the semester or any of the other semesters to spend time at any other University abroad. Only, in this case they would not have a guarantee that their courses would be recognized later as they have at MSM. Despite this restriction, recognition of credits awarded at other institution following a learning agreement with RWTH Aachen is possible in accordance with the Lisbon convention.

Generally, the peers agree that the present curriculum is adequate in order to convey the defined programme learning outcomes. They only emphasize that currently advanced scientific research methods, especially in the management sector, are underrepresented in the curriculum and should be further strengthened. If the future development of the programme aimed at a more scientific orientation of the programme as is envisaged by the programme coordinators, contents of scientific research, academic writing, etc. should generally be enhanced. The peers further noticed, that the scope for individual specializations within the programme is very limited. Since all students already have a certain professional and specialization background the programme should offer some electives where students may strengthen their individual orientations.

Modularization / Module descriptions:

It was established by the peers that the programme is fully modularized and that each module is a coherent learning unit. For the successful completion of a module, credits are awarded according to the ECT-System. In accordance with the examination regulations credits are only awarded if a module exam is passed. Nearly all modules have a volume of five credits with a few minor exceptions. Currently, only the third semester comprises 30 credits while there are some deviations in the others. Most importantly, the first semester has quite a high number of 34 credits while the fourth semester with the Master thesis has only 25 credits. The programme coordinators declare in the SAR that this uneven distribution of credits shall be balanced during the next years but the students generally do not complain about an extremely high workload or uneven distribution of credits. Nonetheless, the peers agree that an equal balance should be targeted, especially with an international programme such as MEPS. Arriving foreign students often need more time to get used to their new environment and a high workload of 34 credits in the first semester may be extremely challenging under such circumstances.

Concerning the module descriptions, the peers criticize that these are not always as detailed and homogenous as they should be. Especially the description of contents as well as learning outcomes is often very scarce or superficial. Further, little information about the module examination is provided; usually the descriptions only indicate the duration of the exam but not the type, and even the duration is given indefinite as for example 30-90

minutes. Consequently, the peers consider it important that the students receive more information about exams and that the learning outcomes are reviewed and described in more detail, if necessary. Another aspect mentioned by the peers is the lack of recommended literature in several module descriptions. In many cases it only mentions that students “receive a list of relevant literature” but in order to allow for an adequate preparatory reading at least some recommendation should be listed in the module descriptions.

Didactical concept / Practice orientation:

The didactical concept of the modules comprises lectures, practical units and case studies and is generally adequate to achieve the defined learning outcomes. Students have a working environment available at RWTH University with well-equipped laboratories where individual research and practical work can be carried out. Nevertheless, students would wish for more immediate contact with industry and real-life-problems. As the peers understand, the case-studies are not performed in real cooperation with local industry but students usually are provided data and material from a pool of cases by the university. Further, the peers got the impression that the previous professional work experience of the students is not very much integrated into the didactical concept of many modules. As they learn from the discussions, the engineering modules are all the same as for the regular Master degree students and visited together with them. While, of course, some lecturers make use of the presence of some students with practical experience, their pre-knowledge does not seem to be an integral part of the courses. The peers consider it important, that in order to justify the characterization of the programme as of further education, this prerequisite should be a recognizable element in the teaching and learning process.

Entrance regulation:

The entrance regulations were already discussed under criterion 2.2.

Recognition / Mobility:

As outlined before, the programme comprises a mandatory element of international mobility with the students attending courses in Maastricht during the third semester. Since Maastricht is very close to Aachen, most students prefer to continue living there and drive to Maastricht on a daily basis. The organisation of this transport is well conducted by both universities and the students are generally content with this agreement. However, despite this pre-organized international mobility, other mobility options are not very much supported by the programme, although the peers learn that they were generally possible. The discussion with the students reveals that many of them would actually like to spend another semester abroad and that they do not feel well informed about such opportunities

nor do they think that the recognition of any credits gained at other universities was possible. Although the peers appreciate the cooperation with MSM and deem it laudable that a number of modules is previously agreed on and will be automatically recognized, they also think it worthwhile to inform students about other mobility options that could even be made use of during other semesters than the Maastricht semester. Despite this constraint, recognition regulations are in place and ensure that credits awarded by other universities are recognized as long as no significant difference to the learning outcomes of the local modules can be determined. Especially in this context, the peers refer to the importance of detailed descriptions of learning outcomes for the modules since otherwise a detailed comparison with other modules will be impossible.

Study organisation:

Apart from the smaller restrictions mentioned above, the peers conclude that the general study organization is adequate to ensure the achievement of the defined learning outcomes.

For the consideration of the interests of handicapped students please refer to the assessment and analysis made within criterion 2.4.

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 2.3:

From the HEI's comment on the draft report, the peers understand that the dominant focus of the programme is on practice orientation although aspects of modern research should definitely be included allowing for the continuation of studies in the context of a PhD programme. According to the HEI the Master programme with a scope of 120 Credits allows for the conveyance of sufficient practice as well as scientific content offering the students the best opportunities for a career in industry as well as academia. While the peers general consent with the HEI's assessment concerning the quality of the programme they also underline that academic research methods should be further strengthened in the curriculum in order to fully meet the academic expectations.

In conclusion, the peers consider this criterion to be partly fulfilled.

Criterion 2.4 Academic Feasibility

Evidence:

- Self-Assessment Report

- Website (accessed, 23 July 2018): <https://www.academy.rwth-aachen.de/en/education-formats/msc-degree-programmes/mme-ps>
- A1_RWTH Examination Regulation_MME-PS
- A5_Module Handbook
- On-site-discussions

Preliminary assessment and analysis of the peers:

Entrance requirements:

The entrance regulations and requirements have already been discussed under criterion 2.2.

Student Workload:

As described above the study plans envisage a workload of more or less 30 credits per semester, one credit being equal to 30 working hours. The actual student workload is regularly assessed and the students are of the opinion that the indicated numbers of credits are usually in line with the workload they have to spend on each course. It was already mentioned that the distribution of credits throughout the semesters is not totally equal. Consequently, a better balance of the workload would be recommendable. A problematic aspect in this context is that the engineering courses, which students need to pass during the first two semesters, are the same the regular Master students attend. Compared to them the MEPS students are very few and their special needs in any of the large engineering courses may not be adequately reflected in the overall survey. But the discussions with students and programme coordinators show that in such cases the students have always the opportunity to contact the programme coordinators or the teaching staff and that usually solutions for the improvement of study conditions can be determined.

Exam system:

The load of exams and the required work effort is considered to be adequate by the students as well as the peers. Usually each module is completed by one exam resulting in a usual number of six exams per semester. The form of the exam is decided on at the beginning of each semester and communicated to the students. Similarly, the examination dates are communicated early in advance, at the latest four weeks before the assessment. All

exams are offered at least twice a year and failed exams can be repeated twice. In conclusion, the peers are convinced that the exam system is supportive for a successful completion of the degree programme.

The exam system is furthermore analysed and assessed in detail within criterion 2.5.

Support and Assistance:

The peers have a very good impression of the offers related to support and assistance of the students in the programme as well as the International Academy in general. The students confirm that they receive all the necessary information and that teaching staff and programme coordinators can always be approached in case any problems arise. Very positively described is the support and the general cooperation with MSM. Before the third semester all students are informed about the organizational procedure in an informative meeting and during the semester both institutions try to facilitate the process as much as possible, for example through the introduction of a shuttle service, etc. An important aspect of student life in the international Master programme are offers related to German language and culture. Regarding this aspect, the students express their desire to receive some more information about living in Germany before they come here in order to be better prepared for the daily challenges of life. In addition, many would like to see more German language classes integrated into the curriculum since they would like to stay in Germany after graduation and work here. However, the peers understand that German language proficiency is not the focus of the programme and approve the initiative to refund students the money for extra-curricular German language courses. In conclusion, the support and assistance for the students is absolutely adequate.

Students with handicaps:

According to §6 of the examination regulations any student who makes plausible that he is handicapped in any way may be provided with alternative forms of examinations, be it through the provision of more time to work on assessments, other examinations forms, or other compensations.

After all, the described aspects of study and examination system including entrance requirements (see criterion 2.2) ensure the feasibility of the degree programme.

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 2.4:

The peers consider this criterion to be predominantly fulfilled.

Criterion 2.5 Examination System

Evidence:

- Self-Assessment Report
- Website (accessed, 23 July 2018): <https://www.academy.rwth-aachen.de/en/education-formats/msc-degree-programmes/mme-ps>
- A1_RWTH Examination Regulation_MME-PS
- A5_Module Handbook
- On-site-discussions

Preliminary assessment and analysis of the peers:

During the on-site-visit the peers examine several examples of assessments and final projects coming to the conclusion that they do reflect the envisaged qualification level of the programme and that modules usually have only one final exam. The discussions with students and teachers show that a variety of examination types is applied. While the more fundamental engineering courses are usually assessed through written exams, especially the management courses of the third semester focus on project works, case-studies and oral examinations. Consequently, the peers see that the form of exam usually corresponds to the learning outcomes described. However, as was pointed out before, from the module descriptions it is usually not recognizable what type of exam will be held and the length of exams is sometimes given in huge variations. The peers understand that in some cases the form of assessment needs to be flexibly adapted to the number of students but affirm that generally the examination form should be indicated in the module descriptions.

With regard to the regulations for compensating disadvantages of handicapped students please refer to criterion 2.4. For the binding force of the submitted rules and regulations refer to the analysis and assessment within criterion 2.8.

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 2.5:

The peers consider this criterion to be fulfilled.

Criterion 2.6 Programme-related Cooperations

Evidence:

- Self-Assessment Report
- Discussions during the on-site-visit

Preliminary assessment and analysis of the peers:

The most important cooperation of the degree programme is the already described partnership with the MSM where students spend their third semester passing six management modules. The peers found that the cooperation is well established and working with a close cooperation between programme coordinators as well as quality management. Despite the general intention to align the courses of the two participation institutions in the best possible way, the peers agreed to consider the existing cooperation as a formalized mandatory international mobility window with a determined number of courses that are more or less automatically recognised afterwards by the RWTH Aachen. Students at MSM follow the examination regulations of the MSM and participate in the MSM quality management circles. During the discussion with the students, it was obvious to the peers that they approve of the cooperation and its organization and feel well supported at MSM as well as RWTH. The peers further remark that they would like to see the renewed cooperation agreement between RWTH and MSM, which was promised by the programme coordinators.

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 2.6:

The peers consider this criterion to be fulfilled.

Criterion 2.7 Facilities

Evidence:

- Self-Assessment Report
- C1_RWTH Staff Handbook
- On-site visit
- On-site-discussions

Preliminary assessment and analysis of the peers:

Human Resources:

From the documents provided with the SAR the peers gained an impression of the staff involved in the implementation of the reviewed programme. They learned that all staff

members at RWTH Aachen have an individual contract with the International Academy binding them for the provision of certain lectures in addition to their regular teaching load at RWTH Aachen University. Consequently, the staff available is sufficient for the implementation of the programme and undoubtedly well qualified according to the staff handbook. However, the discussion with the students as well as the teaching staff indicates that in a regular case the programme-specific lectures are not actually held by the professors who are named to be module responsible but by their teaching assistants. Neither peers nor students doubt the high qualification of these staff members. However, it appears that apart from the external MSM modules, the students who pay a significant amount of money each semester, regularly attend the large engineering courses at RWTH Aachen together with all the non-paying students, and that those modules which are designed exclusively for them are often taught not by the professors themselves but by their assistants. Hence, the students confirm that with the exception of the classes taught at MSM and the internal management classes they are only rarely in direct contact with professors during their degree programme. A similar perception had the peers during the discussion with the teaching staff where only one professor was present who teaches classes at MSM. Consequently, the peers emphasize that steps should be taken in order to make sure that lectures are usually performed by the designated lecturers (i.e. professors) indicated in the module handbook.

Staff Development:

Concerning staff development the peers understand that the teaching staff of the programme may partake in all the optional professional development offers at RWTH Aachen University since they have only a private contract with the International Academy and all of them are regularly employed at RWTH Aachen University.

Financial and technical provision:

The financial provision for the programme is ensured via the students' study fees. As the programme is strongly requested by applicants there is no reason to doubt its financial stability for the upcoming accreditation period. The technical equipment and laboratories were inspected during the on-site-visit and all peers agree that they are of the highest quality and offer an ideal study environment for the programme.

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 2.7:

The peers consider this criterion to be predominantly fulfilled.

Criterion 2.8 Transparency and Documentation

Evidence:

- A1_RWTH Examination Regulation_MME-PS
- A5_Module Handbook
- Diploma Supplement
- RWTH Aachen Master Degree Certificate
- RWTH Aachen Transcript of Records

Preliminary assessment and analysis of the peers:

The peers establish that for the programme under review all relevant regulations as well as degree certificates are presented and well communicated to the students. Detailed information about the degree programme, its content, grading structure and information about the German System of Higher Education is provided through the Diploma Supplement issued to the students at graduation.

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 2.8:

The peers consider this criterion to be fulfilled.

Criterion 2.9 Quality Assurance and Further Development

Evidence:

- Self-Assessment Report
- Website (accessed, 23 July 2018): <https://www.academy.rwth-aachen.de/en/education-formats/msc-degree-programmes/mme-ps>
- RWTH Aachen Quality Management Concept and Objectives in Learning and Teaching
- MSM Quality Assurance Policy
- Eva-Sys Evaluation Questionnaire
- International Academy Study Progress Questionnaire

- Course Evaluation Form
- On-site-discussions

Preliminary assessment and analysis of the peers:

The programme generally fits into the well-developed quality management system of the RWTH Aachen University with a variety of instruments to survey the further development of the programme, the conveyance of learning outcomes, the qualification of graduates for the job market, the workload and the satisfaction of students with the programme.

On the programme level there is a quality management coordinator who is also involved in the close cooperation with MSM in order to ensure equal quality assurance standards. All courses are evaluated with the Eva-Sys system each semester and results are discussed with the students afterwards. The results are analysed by the quality management coordinator and discussed with the programme coordinators on a regular basis. In case of any anomalies, these are being discussed with the teaching staff member referred to, and if quality standards are constantly not met, the individual teaching contract may be ended. However, as the number of students in the programme is very limited, students as well as teachers cultivate a form of immediate and personal feedback. From the discussion with the students, the peers clearly understand that they can always contact the staff members and ask for improvements. A prominent example of such an informal process is the establishment of a bus shuttle to Maastricht. While this informal feedback process is working well, the peers also understand that the response rate to the official course evaluation is very low. One reason might be that the survey is online; students do not feel motivated to partake in it. In order to establish a regular and reliable feedback system, the peers recommend to further encourage the students' participation.

The students also expressed that they did not feel to be part of a general programme development process despite their involvement in course evaluations. This could be explained by the fact that for the programme there is no individual study committee with a student representative. Instead, the students are only indirectly represented through the students' council of the regular Master programme but do not feel that this representation is actually meeting their special needs. Consequently, the peers think it important to establish a regular student involvement in the programme development and administration processes.

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 2.9:

The peers consider this criterion to be predominantly fulfilled.

Criterion 2.10 Study Programmes with a Special Profile Demand

The Master programme's special profile is one of further education. All aspects related to the accreditation criteria are handled in the respective chapters of this report.

Criterion 2.11 Gender Justice and Equal Opportunities

Evidence:

- Self-Assessment Report
- List of Advising Offices for students with disability or chronic illness
- Questionnaire for improving conditions for students with disability or chronic illness
- Website Service & Advice (accessed 24 July 2018): <https://www.academy.rwth-aachen.de/en/services-advice>

Preliminary assessment and analysis of the peers:

RWTH Aachen University and the International Academy offer a variety of services for students with disability or chronic illness as well as to support students in special living conditions. Of special importance at the International Academy are the integration offers made to students from other countries including information about student housing, scholarships, language courses, etc. In conclusion, the peers approve of the information and supporting services of the University and the International Academy and clearly see the motivation to support gender justice and equal opportunities for all students.

Concerning the compliance in dealing with the interest of handicapped students please refer to criterion 2.4.

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 2.11:

The peers consider this criterion to be fulfilled.

D Additional Documents

Before preparing their final assessment, the panel ask that the following missing or unclear information be provided together with the comment of the Higher Education Institution on the previous chapters of this report:

1. Detailed list of examination types and, where appropriate, their relative weights for each module
2. Cooperation agreement between RWTH International Academy and Maastricht School of Management
3. Valid examination regulations

E Comment of the Higher Education Institution (22.08.2018)

The institution provided a detailed statement in a separate document.

F Summary: Peer recommendations (10.09.2018)

Taking into account the additional information and the comments given by the peers summarize their analysis and **final assessment** for the award of the seals as follows:

Degree Programme	Label Accreditation Council	Maximum duration of accreditation
Ma Management and Engineering in Productions Systems	With requirements for one year	30.09.2025

Requirements

- A 1. (AR 2.1; 2.3) The advanced profile of the study program has to be emphasized more strongly within the study courses.
- A 2. (AR 2.3) Scientific research methods in the field of management must be taken into greater account.
- A 3. (AR 2.3) The module descriptions must inform adequately about the modules' contents, its qualification objects as well as its method of examination.

Recommendations

- E 1. (AR 2.7) It is recommended that those professors responsible for the modules shall also teach the modules' core subjects.
- E 2. (AR 2.2) It is recommended to specify the entry requirements concerning the applicants' preceding practical experience in order to secure that every student has had adequate work experience.
- E 3. (AR 2.3) It is recommended to extend the choice of study course within the curriculum to further the individual student's profile.
- E 4. (AR 2.3) It is recommended to communicate more efficiently the Maastricht-Semester and the opportunities of international mobility.
- E 5. (AR 2.4) It is recommended to distribute the ECTS-points more evenly through the semesters.
- E 6. (AR 2.9) It is recommended to include the students more into the developmental processes of the study program.

- E 7. (AR 2.3) It is recommended to include bibliographical references in the module descriptions.

G Comment of the Technical Committee

Technical Committee 06 – Industrial Engineering (13.09.2018)

Assessment and analysis for the award of the label of the Accreditation Council

The Technical Committee discusses the procedure and agrees with the decision of the peers.

The Technical Committee 06 – Industrial Engineering recommends the award of the label as follows:

Degree Programme	Label of Accreditation Council	Maximum duration of accreditation
Ma Management and Engineering in Production Systems	With requirements for one year	30.09.2025

Requirements

- A 1. (AR 2.1; 2.3) The advanced profile of the study program has to be emphasized more strongly within the study courses.
- A 2. (AR 2.3) Scientific research methods in the field of management must be taken into greater account.
- A 3. (AR 2.3) The module descriptions must inform adequately about the modules' contents, its qualification objects as well as its method of examination.

Recommendations

- E 1. (AR 2.7) It is recommended that those professors responsible for the modules shall also teach the modules' core subjects.
- E 2. (AR 2.2) It is recommended to specify the entry requirements concerning the applicants' preceding practical experience in order to secure that every student has had adequate work experience.
- E 3. (AR 2.3) It is recommended to extend the choice of study course within the curriculum to further the individual student's profile.

G Comment of the Technical Committee

- E 4. (AR 2.3) It is recommended to communicate more efficiently the Maastricht-Semester and the opportunities of international mobility.
- E 5. (AR 2.4) It is recommended to distribute the ECTS-points more evenly through the semesters.
- E 6. (AR 2.9) It is recommended to include the students more into the developmental processes of the study program.
- E 7. (AR 2.3) It is recommended to include bibliographical references in the module descriptions.

H Decision of the Accreditation Commission (28.09.2018)

Assessment and analysis for the award of the ASIIN seal:

The Committee discusses the procedure and agrees with the decision of the peers and the technical committee.

The Accreditation Commission for Degree Programmes decides to award the following seals:

Degree Programme	Siegel Akkreditierungs- rat (AR)	Maximum duration of accreditation
Ma Management and Engineering in Productions Systems	With requirements for one year	30.09.2025

Requirements

- A 1. (AR 2.1; 2.3) The advanced profile of the study program has to be emphasized more strongly within the study courses.
- A 2. (AR 2.3) Scientific research methods in the field of management must be taken into greater account.
- A 3. (AR 2.3) The module descriptions must inform adequately about the modules' contents, its qualification objects as well as its method of examination.

Recommendations

- E 1. (AR 2.7) It is recommended that those professors responsible for the modules shall also teach the modules' core subjects.
- E 2. (AR 2.2) It is recommended to specify the entry requirements concerning the applicants' preceding practical experience in order to secure that every student has had adequate work experience.
- E 3. (AR 2.3) It is recommended to extend the choice of study course within the curriculum to further the individual student's profile.

- E 4. (AR 2.3) It is recommended to communicate more efficiently the Maastricht-Semester and the opportunities of international mobility.
- E 5. (AR 2.4) It is recommended to distribute the ECTS-points more evenly through the semesters.
- E 6. (AR 2.9) It is recommended to include the students more into the developmental processes of the study program.
- E 7. (AR 2.3) It is recommended to include bibliographical references in the module descriptions.

I Fulfilment of Requirements (28.06.2019)

Requirements

A 1. (AR 2.1; 2.3) The advanced profile of the study program has to be emphasized more strongly within the study courses.

Initial Treatment	
Peers	<p>Fulfilled (3), not fulfilled (1)</p> <p>Die von der HS zur Auflagenerfüllung angeführte curriculare Weiterentwicklung des Studiengangs geht an der beauftragten Problematik vorbei.</p> <p>Die Gutachter hatten bemängelt, dass ein guter Teil der in Aachen angesiedelten Kurse - und hier insbesondere im Bereich der Technik - zusammen mit Studierenden aus konsekutiven Studienprogrammen gelehrt wird. Die konsekutiven Studierenden stellen in diesen Veranstaltungen die deutliche Mehrheit und können in der Regel keine einschlägige berufliche Erfahrung vorweisen, auf die innerhalb der einzelnen Veranstaltungen (WITHIN the study courses) Bezug genommen werden könnte. Eine individuelle Bezugnahme würde darüber hinaus deutlich kleinere Gruppen voraussetzen, als sie im Rahmen dieser Zusammenlegung erreicht werden.</p>
TC 06	<p>not (completely) fulfilled</p> <p>Vote: unanimous</p> <p>Justification: The TC follows in its assessment the considerations of one peer in so far as the requirements has not yet been convincingly fulfilled.</p>
AC	<p>not (completely) fulfilled</p> <p>Vote: unanimous</p> <p>Justification: The Accreditation Committee discusses the procedure and agrees with one peer's critical assessment that the University has modified the curriculum by integrating specific study tracks emphasizing the respective professional background of the students but that in the description of the programme learning outcomes a special reference to the students' professional background is not yet being made. This should be added.</p>

A 2. (AR 2.3) Scientific research methods in the field of management must be taken into greater account.

Initial Treatment	
Peers	Fulfilled (3), not (completely) fulfilled (1)

	<p>Für eine vollständige Erfüllung der Auflage müsste sichergestellt sein, dass alle Studierenden von dieser neu geschaffenen Möglichkeit profitieren. Das vorgelegte Curriculum erweckt dagegen den Eindruck, dass die Studierenden zwischen dem betreffenden Modul (Sustainable Development and the Global Economy) und einem weiteren Modul (Entrepreneurial Strategy) wählen können. Darüber hinaus lässt sich die beauftragte Stärkung der wissenschaftlichen Methodenausbildung aus Sicht eines Gutachters nur schwer über einen Kurs erreichen, in dem die quantitativen und qualitativen Forschungsmethoden nicht im Zentrum stehen; in den Contents dieses Moduls kann kein Verweis auf die geforderten Forschungsmethoden erkannt werden.</p>
TC 06	<p>not (completely) fulfilled Vote: unanimous Justification: The TC follows in its assessment the considerations of one peer in so far as the requirements has not yet been convincingly fulfilled.</p>
AC	<p>not (completely) fulfilled Vote: unanimous Justification: The Accreditation Committee agrees with the critical assessment that from the module description presented it does not become entirely clear where and which scientific research methods are part of the module. In addition, they agree that by having this as an elective the students still have the opportunity to complete the programme without deepening their skills in scientific research methods.</p>

A 3. (AR 2.3) The module descriptions must inform adequately about the modules' contents, its qualification objects as well as its method of examination.

Initial Treatment	
Peers	<p>Fulfilled (3), not fulfilled (1)</p> <p>Auf Basis der vorgelegten Unterlagen lässt sich die Erfüllung dieser Auflage für einen Gutachter nicht zweifelsfrei feststellen. Es wäre das gesamte, an den betreffenden Stellen überarbeitete Modulhandbuch erwartet worden. Stattdessen wurde exemplarisch auf ein neu-geschaffenes Modul und eine zentrale Vorgabe der RWTH Aachen verwiesen.</p>
TC 06	<p>not (completely) fulfilled Vote: unanimous Justification: The TC follows in its assessment the considerations of one peer in so far as the requirements has not yet been convincingly fulfilled.</p>

J Fulfilment of Requirements (06.12.2019)

AC	not (completely) fulfilled Vote: unanimous Justification: The Accreditation Committee agrees that the complete module handbook should have been presented.
----	--

Decision of the Accreditation Committee (28.06.2019)

Degree programme	Siegel Akkreditierungsrat (AR)	Accreditation until max.
Ma Management and Engineering in Production Systems	Requirement 1, 2 and 3 not fulfilled	6 months prolongation

J Fulfilment of Requirements (06.12.2019)

Degree programme	Siegel Akkreditierungsrat (AR)	Accreditation until max.
Ma Management and Engineering in Production Systems	All requirements fulfilled	30.09.2025

Appendix: Programme Learning Outcomes and Curricula

According to the self-assessment report the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Master degree programme Management and Engineering in Production Systems:

“The learning objectives that are to be achieved through the sum of the individual modules are summarised in the following categories on the basis of the Dublin Descriptors for Master's degree courses and are mapped by the respective module supervisors:

1. Knowledge and understanding provides a basis or opportunity for originality in the development and/or application of ideas
 - 1 (a) the students interpret complex subject-specific and interdisciplinary contents and are able to expand their existing knowledge;
 - 1 (b) the students use their new knowledge to translate it into proposed solutions;
2. Application of knowledge and understanding through the ability to solve problems in new, unfamiliar contexts or interdisciplinary context
 - 2 (a) the students analyse complex scientific data and information independently using learned scientific methods;
 - 2 (b) the students are able to develop chains of arguments and to make decisions based on concrete examples;
3. Giving an assessment demonstrates the ability to integrate knowledge, handle complexity and formulate judgements based on incomplete or limited information
 - 3 (a) the students can independently carry out research- and application-oriented tasks and critically compare the project results with each other;
 - 3 (b) the students structure relationships, make judgments and evaluate options for action while taking certain criteria into account.
4. Learning strategies that enable students to continue their studies largely independently, communication and cooperation skills, responsible behaviour
 - 4 (a) students can work and communicate successfully in intercultural teams;

0 Appendix: Programme Learning Outcomes and Curricula

4 (b) the students present complex facts and cause-effect relationships and present them to experts as well as to a non-expert group of people.

The following **curriculum** is presented:

M.Sc. Management and Engineering in Production Systems

October 2016

1 Semester	2 Semester	3 Semester	4 Semester	
Engineering Manufacturing Technology I	Engineering Manufacturing Technology II	Management International Business	Engineering Industrial Logistics	
Engineering Industrial Engineering and Ergonomics	Engineering Production Management B	Management Organisational Development & Change	RWTH	MSM
Engineering Production Management A	Engineering Welding & Joining Technologies	Management International Project Management		
Engineering Quality Management	Management Innovation Management	Management Economics for Managers		
Engineering Machine Tools	Management Finance & Accounting	Management Responsible Supply Chain Management		
Management Entrepreneurial Strategy	Management Marketing Management	Management Leadership and High Performance Teams		
Language Centre German Language Course A1 (In September)				
			Master Thesis + Master's defense colloquium Option A: Internship & Thesis Option B: Desk Research & Thesis	