# Study- and Examination-Manual for the Master's Programme

### in the Department of SciTec

**Scientific Instrumentation** 

of the Jena University of Applied Sciences (Ernst-Abbe-Fachhochschule Jena)

### Version 1.0, Summer Semester 2013

This manual provides the essential information on study and examinations. It is not a simple translation of the Studienordung and Prüfungsordnung. The content of the two components has been combined and rearranged. For the sake of better understandability some parts which appear irrelevant to the course leader have been omitted and some modi operandi have been added. Some juristic incorrectness is intentionally accepted. Legally binding are the Studienordnung and the Prüfungsordnung for the Master's programme Scientific Instrumentation.

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### **Section I:** General

### § 1 The Degree Programme

- (1) Scientific Instrumentation is a research oriented Master's programme.
- (2) The language of instruction is English.
- (3) On passing the Master's examination, the Jena University of Applied Sciences shall confer the academic degree of a Master of Science (M.Sc.).
- (4) The final degree of the Master's programme qualifies for entering a doctorate's programme.

### § 2 Duration of the Degree Programme

- (1) The standard length of study shall be four semesters.
- (2) For students pursuing part-time studies, the standard length of study shall be six semesters.
- (3) The programme starts with the winter semester.

# Section II: Programme of Study Subsection 1: Admission and Enrolment

### § 3 Admission

- (1) In order for a student to be admitted to the Master's Programme in Scientific Instrumentation, the following requirements shall be met:
  - a. A Bachelor's degree or any other equivalent or higher degree in a technical or scientific field, whose curriculum covers the special educational prerequisites for the Master's Programme in Scientific Instrumentation. Such degrees shall be, in particular, those awarded in Physics Engineering, Precision Engineering, Physics, Electrical Engineering, Mechatronics, Medical Engineering, Mechanical Engineering and comparable study programmes.
  - b. A good command of English, which shall usually be demonstrated either by a TOEFL or IELTS, in exceptional cases (essentially only for applicants from countries where English is

the primary language or from Hong Kong) by a document proving that the Bachelor's programme was conducted in English. In the paper-based version of the TOEFL test, a total of at least 550 points must have been scored, the minimum score achieved in the computer-based version shall be 213 points, while the minimum score achieved in the internet-based version shall be 79 points. In the IELTS test an "overall band score" of 6.0 is required. The test shall not date back more than three years.

- c. Graduates of other Bachelor's programmes than Physics Engineering, Precision Engineering or Physics need a comprehensive previous knowledge in Engineering Design, Materials Science and Instrumentation. If the previous knowledge is not sufficient, the admission board will issue the obligation to take and pass additional postgraduate basis modules (Solid State Physics, Microsystems Engineering, Design of Precision Devices and Introduction to FEM).
- (2) An overall score will be determined as the criterion for the admission. For that purpose the overall score of the Bachelor's programme (marks obtained in foreign programmes will be converted to German marks) may be adjusted by up to 1.0 grades for one of the following reasons with the total of such adjustments not exceeding 1.5:
  - Content and persuasiveness of the letter explaining the motivation behind the student's application,
  - b. Quality and adequacy of the Bachelor's programme completed,
  - Research done in a field of relevance to the study programme, and quality of such research.
- (3) Condition for the admission is an overall score of "good" (2.0) or better.
- (4) If they so request, rejected applicants may be admitted to a voluntary selection interview. A candidate may prove additional qualifications in the interview. Specifically, a mind for and openness to interdisciplinary issues, as well as special expertise in and a predilection for international activities shall be regarded as particular suitability characteristics. Such characteristics may be demonstrated, especially through examinations passed, vocational education completed or occupational activities or other achievements suggesting a special aptitude for advanced studies. Based on the selection interview the examiners may adjust the overall score from 0.0 to 1.0.
- (5) If there is an entrance limitation for the programme the candidates will be ranked by their overall scores.
- (6) The admission board may issue obligations for the later selection of modules in the programme.
- (7) If an applicant should have cheated in the application procedure he will be rejected, even if he should already have received an invitation letter.

### §4 Enrolment

An admitted candidate will receive an invitation letter for the enrolment. With the enrolment he will become a member of the university. Administrative conditions for the enrolment like insurance and administrative fee will be specified in the admission letter.

# Subsection 2: Layout and Content of the Programme

### § 5 Modular Layout

- (1) The programme has a modular structure. 120 ECTS credits are required for the successful completion, in average 30 ECTS credits per semester.
- (2) Each module will be completed by a module examination. The module examination may consist of several components.
- (3) The curriculum and the examination schedule show if and how modules are based on each other.

### § 6 Layout of the Programme

- (1) Semester one and two i.e., year one (of the full time programme) comprise lectures, tutorials, seminars and lab courses.
- (2) Semester three includes essentially the "Research Internship".
- (3) Semester four aims at the work for the Master thesis and their defence in a colloquium.

### § 7 Curriculum

- (1) The content and layout of the programme are listed in the curriculum (appendix 1). Indicated are all the modules and courses for each semester including their names, semester periods per week, ECTS credits, and character (compulsory, compulsory elective, or elective) for the full time and part time programmes.
- (2) The form and number of the exams which have to be passed in each module are specified in the examination schedule (appendix 2). The language of instruction and examination is also listed.
- (3) Additional modules of the programmes of the Jena University of Applied Sciences and other universities can be taken optionally.
- (4) Postgraduate basic modules serve to upgrade existing individual scientific knowledge. Under the consecutive programme of study, the following postgraduate basic modules shall be completed by graduates of the Precision Engineering and Physics Engineering Bachelor's programmes of the Jena University of Applied Sciences:

<b>Precision Engineering</b>	Physics Engineering									
Solid State Physics	Design of Precision									
(6 credits)	Devices									
	(6 credits)									
Microsystems Enginee-	Introduction to FEM									
ring	(3 credits)									
(3 credits)										

For graduates of other programmes the postgraduate basic modules shall be determined in a binding manner by the course leader.

(5) The compulsory elective modules in non-technical subjects are listed in a catalogue forming a part of the curriculum. From that catalogue, the student shall choose modules carrying a total of six ECTS credits. It should be noted that not all the modules will be available in each semester. Further modules in non-technical subjects may be authorized by the course board on application.

Students lacking an adequate command of German have to take German as a Foreign Language modules as compulsory elective subjects. These modules shall not be available as compulsory elective subjects to all the other students.

- (6) Mesomodules are composed of several modules and represent areas of a particular study focus. Students shall select three mesomodules from the following list:
  - "Micro- and Nanotechnology"
  - "Smart Materials and Sensors"
  - "Scientific Computing"
  - "Metrology and Analytics"
  - "Design"

### § 8 Achievement of Obligations

If the student has been issued obligations to take specific modules, he must pass these modules not later than the collogium or the specified deadline.

### § 9 Minimum Number of Participants

- (1) Courses will be offered if there are at least ten regular participants.
- (2) There is no entitlement that all planned mesomodules, compulsory elective modules, and elective modules will be offered, in particular if the number of participants falls below the minimum in (1).

### **Section III: Consultation**

### § 10 Course Consultation

- (1) Students may seek advice on the arrangement of the studies, the selection of foci, the studying technique, and the examination procedures from the course leader and the departmental coordinator for the Master's courses.
- (2) For each module of the Master's programme a module coordinator is appointed. Such person shall be responsible for all content-related coordination work and all organizational matters pertaining to the module in question.
- (3) Legal advice related to the study and examination orders is provided by the in-house counsel (Justiziar) of the Jena University of Applied Sciences.

### § 11 Examination Board

- (1) The departmental Examination Board decides questions on all affairs of study and examinations.
- (2) Specifically, the Examination Board shall perform the following duties:
  - a. Decide on the admission to examinations.
  - b. Appoint examiners and observers for examinations and set examination dates in cooperation with the Examination Office and the study organisation;
  - c. Decide on the recognition of periods of study, coursework and examination components from other universities or other degree programmes as specified in § 14;
  - d. Confirm the examiner's decision about the treatment of not or incorrectly adduced examinations, in particular on
    - (1) the extension of deadlines, missed deadlines or withdrawal,
    - (2) the invalidity of examinations because of cheating or timeout.

### § 12 Examination Office

- (1) The Examination Office III is in charge of the department of SciTec. It is under control of the dean of the department of "Grundlagenwissenschaften".
- (2) The Examination Office assures the organisational handling and coordination of examination affairs:
  - a. Registration for examinations.
  - b. Administration of the examination data.
  - Issue of certificates and documents.
  - Integration of the examination schedule regarding time scheduling on base of the department's contribution.
  - e. Setting of the deadlines for the registration for examinations on the due date, forwarding these deadlines to the department, and assistance with the registrations.

# Section IV: Examination Procedures Subsection 1: General Provisions

### § 13 Terms of Exclusion

First-time examinations must be taken before the end of the second semester after the target date in the examination schedule (appendix 2) at the latest. Otherwise they will be marked as "failed". This regulation will not apply, if the candidate can not be hold responsible for the failure.

### § 14 Recognition of Examinations

- (1) Examinations, examination components and coursework from other universities or other degree programmes will be recognized on base of the Lissabon-Convention if there is no significant difference to the examinations to be replaced.
- (2) The Examination Board will decide about the recognition on application of the student. Deadline for

the application is the end of week four of the lecture period in which the according examination or coursework must be taken. If the application is granted, the right to take the according examination or coursework will be lost definitely. The student has to submit all relevant documents with his application. Examinations ore coursework can only be recognized if the student has not already taken them in the programme "Scientific Instrumentation".

# **Subsection 2: Start of the Examination Procedure**

### § 15 Examination Dates

The Examination Board will announce the dates for each examination or examination component minimum one week in advance by appropriate means, in particular placards.

### § 16 Admission and Registration

- (1) Only students enrolled at the Jena University of Applied Sciences can take examinations.
- (2) Students must register for examinations within the time limit. The Examination Office will announce the time limits and the way to register as well as monitor the student's registration within the time limit.
- (3) The admission to an examination will be rejected only if one or more of the following conditions are met:
  - a. The candidate has failed the respective examination definitely.
  - b. The number of open and taken second repeat examinations will exceed the maximum allowed number (see §29 (2)).
  - c. The conditions specified in (1) and (2) are not met
  - d. Coursework required for the admission has not been completed or the appropriate documents have not been provided.

### **Subsection 3: Execution of Examinations**

### § 17 Examination Language

- (1) The examination questions in modules taught in English are asked in English. Answers are allowed in English or German.
- (2) The examination questions in modules taught in other languages are asked in the language of instruction. Answers must be given in the language of instruction.

### § 18 Written Examinations

- (1) Written examinations will be taken in the examination period. This period will be specified in the annual schedule and confirmed by the president.
- (2) Regulations for repeat examinations are given in §30.
- (3) Candidates must prove their identity by their Thoska or ID card.

- (4) Written examination papers will be graded by one examiner.
- (5) Final repeat examination papers will be graded by two examiners.
- (6) Written examination papers shall be graded and the results disclosed within six weeks after the examination date. Second repeat examinations should be graded and the results disclosed within four weeks.

### § 19 Oral Examinations

- (1) Oral examinations can also be taken outside of the examination period after approval by the Examination Board.
- (2) As a rule, oral examination components shall be administered by at least two examiners or by one examiner, with an expert observer in attendance, in the form of group examinations or individual examinations. Examinations shall not take less than 15 minutes per examinee and subject. They shall not exceed 60 minutes, even for group examinations.
- (3) The principal subjects and results of oral examinations shall be recorded in minutes. The outcome shall be announced to the examinee directly after oral examinations and communicated to the Examination Office within four weeks.
- (4) The chairman of the Examination Board or the examiner may permit students intending to take the same examination during a later examination period to attend the examination as auditors, unless objected by the examinee concerned or by a non-disclosure agreement. However, such permission shall not cover deliberations about the examination and the announcement of the examination outcome to the examinee.

### § 20 Alternative Examinations

- (1) Alternative examinations are e.g. paper presentations, assignment papers or term papers which will be graded.
- (2) An alternative examination may consist of several components.
- (3) Alternative examinations shall be taken outside of the exam period.
- (4) The type and extent of alternative examination components to be taken shall be announced to the students at the beginning of the lecture period of the semester concerned at the latest.
- (5) Not later than four weeks after the day of examination, the grades of alternative examinations shall be announced and communicated to the Examination Office. If the alternative examination was taken in an oral manner, the grade awarded shall be announced to the examinee directly after the examination concerned.

# **Subsection 4: Research Internship and Master's Thesis**

### § 21 Research Internship and Master's Thesis

- (1) Research Internship and Master's Thesis can be performed in a laboratory of the Jena University of Applied Sciences, in other universities, research institutes or in industry.
- (2) Research Internship and Master's Thesis may be carried out along one thematic line in the same institution. They may also be carried out in different fields at different institutions.
- (3) The search and application for appropriate positions for Research Internship and Master's Thesis falls to the student.
- (4) Appropriate topics may come from the fields "Micro- and Nanotechnology", "Smart Materials and Sensors", "Scientific Computing", "Metrology and Analytics" and "Industrial Design".
- (5) The student can suggest topics.
- (6) The academic supervision of Research Internship and Master's Thesis can be performed by professors from the SciTec department or from other departments of the Jena University of Applied Sciences who are teaching in the Scientific Instrumentation programme, and who are competent in the field of work.
- (7) The institution in which the Research Internship or Master's Thesis is performed will nominate an internal mentor who will guide the student. The internal mentor must carry an academic degree. By signing the application form the internal mentor declares his willingness to support the student with information and hints and to provide his expert opinion about the student's work in a written statement including a proposed grade.
- (8) The student may start the Research Internship or the orientation into the field for his Master's Thesis (see \$23 (2)) only after the agreement by an academic supervisor as described in (6) and the approval of the respective application by the course leader.
- (9) Before starting the Research Internship or the orientation into the field for his Master's Thesis the student shall sign a contract with the respective institution. Sample contracts are provided by the Praktikantenamt. Before signing the contract the student shall obtain the approval of the Praktikantenamt.
- (10) The student shall inform the academic supervisor about the progress with his work in adequate intervals. If the work is performed in an outside institution one meeting should be arranged in this institution during the working period, if possible,
- (11) In exceptional cases Research Internship or Master's Thesis may be performed in the form of a group work. In such a case the contribution of the single candidate which has to be graded must be clearly identified by sections, page numbers or other objective criteria.
- (12) The student has to observe the rules of good scientific practice. See e.g.: Sicherung guter wissenschaftlicher Praxis, Safeguarding Good Scientific Practice, Denkschrift, Deutsche Forschungsgemeinschaft, Wiley-VCH, Weinheim, 1998.
- (13) It is recommended that the student participates in the optional module "Research Seminar". If this is not possible because of the spatial distance, the partici-

pation in a comparable seminar in the institution where the student works is recommended.

### § 22 Research Internship

- (1) Within the Research Internship the student shall solve a subtask within a research and development project independently.
- (2) The Research Internship must not be started earlier than scheduled in the curriculum.
- (3) The Research Internship must not be started before all module examinations scheduled for semester one have been passed.
- (4) The length of the Research Internship is minimum 18 weeks of full time work. During this time the student is not entitled to take vacation.
- (5) The student will author a report demonstrating the process and the progress of his work in the Research Internship. He will hand the report to his academic supervisor on paper and additionally in digital form in a format specified by the academic supervisor.
- (6) The academic supervisor decides about the acceptance of the Research Internship. It will be marked on base of the report and the consultations after the Master's Thesis has been handed over.

### § 23 Master's Thesis

- (1) In his Master's Thesis the candidate shall prove that he is able to process a problem of his subject within a specified time period independently and with scientific methods.
- (2) The student may start with an orientation into the field for his Master's Thesis before he will apply for the assignment of the Master's Thesis topic.
- (3) The candidate has to apply for the assignment of the Master's Thesis topic to the course leader. The topic will be approved if the conditions as described in (3) are fulfilled. The topic and the day of assignment will be filed. The topic can be passed back only once within a month after the assignment.
- (4) For the assignment of the topic of the Master's Thesis the student has to provide the following documents to the course leader:
  - a. A proof that all required examinations including the preceding semester (see appendix 1) have been passed successfully. On written application the Examination Board may allow a modification of this condition if the Master's Thesis is performed abroad.
  - b. A proof of successful performance of the Research Internship.
  - c. A declaration by the candidate that he has not failed a Master's examination in the Master's programme "Scientific Instrumentation" in an other university in Germany definitely, and that he is not involved in an open examination procedure.
- (5) At the latest, the candidate must apply for the assignment of the Master's Thesis topic before the end of the semester which follows after his last module examination. Otherwise the Master's Thesis is counted

- as "Failed" for the first time, unless the failure is not in the candidate's responsibility.
- (6) The working time for the Master's Thesis is 18 weeks. If the candidate can proof reasons which are not in his responsibility, the working time may be extended by three weeks on application. Typically the written thesis may have not more than 80 pages.
- (7) The candidate has to hand in two copies of the Master's Thesis in bound form to the Dean's office within the time limit. The date of hand-in will be filed. The candidate has to assure in writing that he has authored his thesis independently in the case of a group thesis his marked parts and that he has not made use of sources or materials other than those cited. In addition the thesis has to be provided in digital form in a format as specified by the academic supervisor.

### § 24 Grading of the Master's Thesis

- (1) The Master's Thesis will usually be graded by two examiners. The academic supervisor shall be one of the examiners. The internal mentor is usually the second examiner.
- (2) The candidate may suggest an examiner or a group of examiners to the Examination Board. There is no entitlement that the suggested examiners will be appointed.
- (3) The assessment of the Master's Thesis should not take longer than three months.
- (4) Assessment shall generally be based on the following criteria:
  - a. completeness,
  - b. creativity, ideas and originality,
  - c. economical thinking,
  - d. comprehensiveness and own share in the results presented,
  - e. personal initiative,
  - f. objectivity and persuasiveness,
  - g. logic and systematics,
  - h. intensity of work,
  - i. experimentation skills,
  - j. practical relevance and benefits,
  - k. use of accessible scientific literature,
  - 1. clarity and neatness of presentation,
  - m. structuring, language and style.
- (5) The Master's Thesis shall be assessed as "Failed" (5.0) if:
  - a. it is not submitted within the allotted time,
  - b. the candidate influences the examination outcome by deceit or use of unauthorized means of assistance,
  - c. it does not measure up to the requirements specified.
- (6) The Master's Thesis shall be deemed successfully completed if the assessment awarded on the basis of the opinions presented by the examiners (see (1)) is 4.0 or better.
- (7) The decision on the successful completion and the assessment of the Master's Thesis shall be subject to the following provisions:
  - If the Master's Thesis is assessed solely on the basis of opinions presented by professors of the Jena University of Applied Sciences, the

- arithmetic mean of the grades shall be calculated as a rule. If the arithmetic mean is in between two designated marks, the examiners agree on one of the nearest marks.
- b. Supplementary or supporting opinions prepared by mentors and subject specialists shall be taken into account for the determination of grades.
- c. Whenever the assessments proposed by the experts presenting opinions are more than two full grades apart, the Examination Board may determine that another opinion needs to be obtained. Based on the above criteria, the grade proposed therein shall be taken into account, on an equal footing, for the assessment of the Master's Thesis.
- d. Another opinion shall be mandatory whenever there are two opinions (of which one may be a supporting or a complementary opinion), with one of them assessing the thesis as "Failed". In such a case, the thesis shall be deemed successfully completed if the additional opinion recommends an assessment of 4.0 or better.
- (8) In the event of formal deficiencies, which are detected only after the thesis has been submitted and which do not result in the thesis being rejected, the candidate shall be instructed to hand in a relevant correction sheet.

### § 25 Colloquium

- (1) A colloquium shall be held at which candidates shall present the results of their Master's Thesis in the form of a talk and defend them against professional criticism.
- (2) The colloquium may take place only when all the module examinations and the Master's Thesis have been passed successfully. For the final grading of the Master's Thesis the colloquium must have been given "Sufficient" grades at least.
- (3) A commission shall be set up for the colloquium. It shall be composed of a chairman, the supervisors and a minute taker. The chairman and minimum one of the examiners, usually the academic supervisor, must be professors. The candidate may suggest an examiner or a group of examiners to the Examination Board. There is no entitlement that the suggested examiners will be appointed. The names of the examiners will be filed and disclosed to the candidate minimum one weak before the examination will take place. Only urgent needs like longer illness may give reason for a change of an examiner.
- (4) In all, the colloquium shall not exceed 60 minutes. In an oral presentation not exceeding 30 minutes, the candidate shall describe the objective associated with the topic, as well as findings and conclusions.
- (5) The permission of auditors and confidentiality will be ruled as described in § 19 (4), respectively. However, such permission shall not cover subsequent deliberations and the announcement of the examination result to the examinee.

- (6) In addition to the oral presentation the Master's Thesis will be presented on a poster. This has to be handed in in digital form too.
- (7) A colloquium which has been assessed as a "Failed" may be repeated once.

### **Subsection 5: Assessment Procedure**

# § 26 Failure by Absence, Deceit, or Breach of Regulations

- (1) An examination will be graded as "Failed" if:
- The candidate does not show up or withdraws, unless he has resigned according to the rules. The candidate has resigned according to the rules if there is an important reason, the candidate applies the resignation on this base and the application is accepted. The important reason shall be communicated in writing and explained in a credible manner immediately, i.e., by the end of the third workday following the examination date at the latest. If an examinee is ill, a medical certificate or - in the event of repeated illness at this examination - a certificate issued by a medical officer of health shall be presented, within the time limit stipulated in sentence 3, as proof of the examinee's incapacity to take a given examination. The illness of a child or family member mainly cared for alone by examinees shall be deemed equal to examinee's illness. Maternity protection periods or parental leave shall be proven by the appropriate documents.
- 2. A written or alternative examination or the Master's Thesis is not produced within the prescribed completion time, unless there is an important reason for the delay. The regulations in (1) sentences 4 to 7 apply respectively.
- 3. Examinees try to influence the outcome of their examination by deceit or use of unauthorized means of assistance.
- (2) Examinees preventing the examination from proceeding in an orderly fashion may be expelled from the examination by the examiner or supervisor in question. Whenever this is the case, the examination shall be graded as a "Failed". In severe instances, the Examination Board may exclude the examinee from taking further examinations.
- (3) Within one month, the examinee may request that the decisions made under (1) and (2) be reviewed by the Examination Board.

### § 27 Grading of Examinations

(1) The following grades shall be used for grading examinations:

1	Very Good (1,0; 1,3)	An excellent performance
2	Good (1,7; 2,0; 2,3)	A performance considerably above average standards
3	Satisfactory (2,7; 3,0; 3,3)	A performance that corresponds to average standards
4	Sufficient (3,7; 4,0)	A performance that still meets applicable standards despite being deficient

5	Failed	A performance that fails to meet applicable standards
	(5,0)	because of considerable deficiencies

(2) If an examination is graded on the basis of points, use of the following grading system is recommended:

Very Good	A minimum of 90 per cent of the						
very dood	total number of points achievable						
Good	A minimum of 75 per cent of the						
Good	total number of points achievable						
Satisfactory	A minimum of 60 per cent of the						
Satisfactory	total number of points achievable						
Sufficient	A minimum of 50 per cent of the						
Sufficient	total number of points achievable						
Foiled	Less than 50 per cent of the total						
Failed	number of points achievable						

Intermediate stages between these grades are interpolated linearly.

(3) If a module examination consists of several performances the module grade will be calculated as their weighted average. Only the first decimal will be included. All further decimals will be discarded without rounding. All the single performances must have been cleared with the grade "Sufficient" or better. The module grade will be:

Very Good	At average up to and including 1.5
Good	At average from 1.6 up to and including 2.5
Satisfactory	At average from 2.6 up to and including 3.5
Sufficient	At average from 3.6 up to and including 4.0
Failed	At average from 4.1 and higher

- (4) An overall grade will be composed for the Master's examination. It will be calculated out of all the particular module grades with their ECTS credits put on weight. Article (3) will be applied accordingly for the formation of the overall grade.
- (5) The principles of the ECTS grading will be applied to the grading of module examinations. Starting from a cohort of minimum 50 students or graduates the ECTS grades will be specified as:

ECTS grade	deutsch	englisch
A	hervorragend	excellent
В	sehr gut	very good
С	gut	good
D	befriedigend	satisfactory
Е	ausreichend	sufficient

They will be calculated according to the "Order for the calculation of ECTS-grades in the Ernst-Abbe-Fachhochschule Jena" in their effective version.

### § 28 Rating of Coursework

Coursework will be rated as "Passed" or "Failed".

# **Subsection 6: Outcome of the Examination Procedure**

### § 29 Passed Module Examinations

A module examination will be passed if the module grade is "Sufficient" or better and the coursework rated as "Passed".

### § 30 Repeat of Failed Module Examinations

- (1) Failed examinations may be repeated maximum twice. It is not allowed to repeat an examination already passed. Failed examinations in the same or a comparable course, also at other universities, will be counted.
- (2) A maximum of only four second reexaminations will be allowed.
- (3) Regulations for examinations given in this order are also effective for re-examinations with the exceptions in the following articles.
- (4) If regular examinations are planned for the examination period of the following semester it is compulsory for the students to take them as their reexaminations. Otherwise students must take the reexaminations which will be offered within the first eight weeks of the lecture period of the following semester.
- (5) A Master's Thesis graded as "Failed" (5.0) can be repeated only once. The second topic can be passed back (see §23 (2)) only if the first topic had not been passed back.
- (6) A second re-examination may be conducted as oral examination after approval by the Examination Board.

### § 31 Definite Fail in Module Examinations

- (1) If the candidate has definitely failed a module examination he will be exmatriculated. A module examination is definitely failed if it has been graded as "Failed" and there is no more right for a reexamination after § 29.
- (2) The candidate will be informed instantly in writing if he has definitely failed a module examination or if the Master's Thesis has been graded as "Failed". (see § 31).
- (3) On application and on presentation of the exmatriculation certificate by the candidate who has definitely failed the Master's examination a testation will be issued which lists the module examinations and the grades and which states that the Master's examination is failed.

### § 32 Disclosure of Examination Decisions

(1) Examination decisions which will directly change the legal position of a candidate will be disclosed to the candidate instantly in written form. The

reason will be stated and an instruction on the right to appeal will be included. Such examination decisions include a fail of the Master's examination or decisions for which the student applies for a note in written form as the respective examination will be beneficial for his career, in particular if the competence for an internship inside or outside of the study order of the course will be proven.

(2) Other examination results may be disclosed by bulletins or similar public domain facilities. The protection of personal data will be recognized.

## § 33 Transcript of Records and Master Certificate

- (1) The candidate will receive a transcript of records for his passed Master examination in German and English language as possible within four weeks. The transcript of records will include the modules with grades, the title and grade of the Master's Thesis, the grade of the colloquium and the overall grade, each of them with the respective ECTS credits. The overall grade and on application by the student also the module grades will be stated in an additional document with their ECTS grade. Elective modules and additional achievements may be included in the transcript of records on application to the Examination Office or, if required, to the Examination Board.
- (2) The transcript of records will be signed by the Dean and the Head of the Examination Board.
- (3) The candidate will also receive a Master certificate in German and English language with the date of the transcript of records. The Master certificate certifies the conferment of the Master's title. The Master certificate will be signed by the University President and carries the university seal.
- (4) The transcript of records carries the date at which the colloquium has been graded.
- (5) A "Diploma Supplement" will be appended to the transcript of records.

### Subsection 7: Corrections after Completion of the Examination Procedure, Inspection of Records, Opposition Proceedings

### § 34 Corrections of Grades

- (1) If it becomes known only after the handout of the certificate that the candidate has cheated in an examination, the grade of this examination may be denied. Where appropriate the module examination and the Master's examination will be declared as "Failed" by the university on recommendation of the Examination Board. The Master's Thesis will be treated accordingly.
- (2) If it becomes known after the handout of the certificate that the requirements for the participation in an examination had not been met, but without the candidate's intention to cheat, this fault will be cured by a pass of the examination. If the candidate has deliberately obtained the participation in an examination at fault, this examination and the Master's examination may be declared as "Failed".

- (3) The candidate will have the opportunity to comment ahead of the decision.
- (4) The wrong transcript of records will be confiscated by the university and replaced by a new one where appropriate. The Master certificate will also be confiscated if the Master's examination has been declared as "Failed". A decision as in (1) or (2) cannot be made later than five years after the date of the certificate.

### § 35 Searching of Examination Records

On written application to the departmental Examination Board within one year's time the candidate will be granted searching of the Master's Thesis, the related reports and minutes of examination.

### § 36 Opposition Proceedings

- (1) Students may enter an objection against rulings relating to examinations.
- (2) The objection must be lodged in writing or for record to the Examination Office: Prüfungsamt, Fachhochschule Jena, Carl-Zeiss-Promenade 2, 07745 Jena, within one month after notification of the decision. The objection may also be addressed to the President of the Ernst-Abbe-Fachhochschule Jena (Jena University of Applied Sciences).
- (3) If the departmental Examination Board evaluates the objection as founded it will remedy the decision. Otherwise it will forward the objection to the President who will enact a ruling on the objection.

### **Curriculum for the Master's Programme in Scientific Instrumentation - Full-Time Studies**

S – seminar

### Compulsory Modules

Legend:

V – lecture

Module No.	Module Name	Semester	V	/ S	1 Ü	ЭP	1	V	S	2 Ü 1	P	V	s Ü	P	V S	4 Ü P	ECTS Credits
ET.2.903 SciTec.2.042 SciTec.2.111	Embedded Digital Systems Optical Instruments Physical Materials Diagnostics Postgraduate Basis Modules Non-Technical Compulsory Elective Module 1		2	0 0 0	0	2											6 6 6 9 3
	Mesomodule 1 Mesomodule 2 Mesomodule 3 Non-Technical Compulsory Elective Module 2																9 9 9 3
SciTec.2.618 SciTec.2.501	Research Internship Soft Skills												weeks	0			27 3
SciTec.2.705 SciTec.2.801	Master's Thesis Colloquium														18 w	eeks	27 3

P – laboratory

Ü – tutorial

### **Curriculum for the Master's Programme in Scientific Instrumentation - Full-Time Studies**

### Compulsory Elective Modules

Module No.	Module Name	Semester	V	1 S	ΪÏ	p	V	S	2 ř	ı p	V	3 S 1	ÜΡ	,	4 V S	Ü P	ECTS Credits
Postgraduate B	asis Modules		•	J	C	•	•	5	C	, 1	•	5 (	0 1		<b>V</b> D	0 1	Cicuits
SciTec.2.088	Solid State Physics		3	0	1	0											6
SciTec.2.032	Microsystems Engineering		2	0	1	0											3
SciTec.2.007	Design of Precision Devices		2	0	0	3											6
SciTec.2.017	Introduction to FEM		2	0	0	1											3
Non-Technical	Compulsory Elective Module 1																
GW.2.110	German as a Foreign Language I		0	0	4	0											3
GW.2.112	English for Specific Purposes I		0	0	3	0											3
GW.2.109	Other Foreign Languages		0	0	3	0											3
BW.2.906	Intercultural Communication		0	2	0	0											3
BW.2.907	Compulsory Elective Module from Business Economics		0	2	0	0											3
Non-Technical	Compulsory Elective Module 2																
GW.2.111	German as a Foreign Language II						0	0	4	0							3
GW.2.113	English for Specific Purposes II						0	0	3	0							3
GW.2.109	Other Foreign Languages						0	0	3	0							3
BW.2.906	Intercultural Communication						0	2	0	0							3
BW.2.907	Compulsory Elective Module from Business Economics						0	2	0	0							3

**Legend**: V - lecture S - seminar  $\ddot{U} - tutorial$  P - laboratory

### **Curriculum for the Master's Programme in Scientific Instrumentation - Full-Time Studies**

### Compulsory Elective Modules

Module No.	Module Name	Semester	V	1 S	ÜΡ	V	2 S	;* 	p	V	3	ÜΡ	V	4 S Ü P	ECTS Credits
Mesomodule "M	Aicro- and Nanotechnology"		•	b	0 1	•	b	O	•	•	5	0 1	•	5 6 1	Credits
SciTec.2.031	Micro- and Nanostructures					3	0	0	2						6
SciTec.2.113	Thin Films						0								3
Mesomodule "S	mart Materials and Sensors"														
SciTec.2.029	Materials for Sensors and Electronics					4	0	0	1						6
SciTec.2.061	Selected Topics of Sensor Technology					2	0	0	0						3
Mesomodule "S	cientific Computing"														
GW.2.402	Scientific Computing					4	0	0	3						9
Mesomodule "N	Metrology and Analytics"														
SciTec.2.014	Gas Sensing and Aerosol Measurement					3	0	0	2						6
MT.2.902	Instrumental Chemical Analytics					2	0	0	1						3
Mesomodule "D	Oesign''														
SciTec.2.114	Advanced 3D-Design					1	0	0	2						3
SciTec.2.115	FEM and Simulation					1	0	0	2						3
SciTec.2.116	Precision Instrumentation					2	0	0	1						3
* C.1	(-11 (1														

<sup>\*</sup> Selection of totally three out of the five offered mesomodules.

**Legend**: V – lecture S – seminar  $\ddot{U}$  – tutorial P – laboratory

### **Curriculum for the Master's Programme in Scientific Instrumentation - Part-Time Studies**

S – seminar

### Compulsory Modules

Legend:

V-lecture

Module No.	Module Name	Semester	V S Ü P	V S Ü P	V S Ü P	V S Ü P	5 V S Ü P	V S Ü P	ECTS Credits
ET.2.903	Embedded Digital Systems Postgraduate Basis Modules		2 0 0 2						6 9
	Mesomodule 1 Mesomodule 2								9 9
SciTec.2.042 SciTec.2.111	Optical Instruments Physical Materials Diagnostic	cs			$ \begin{array}{cccccccccccccccccccccccccccccccccccc$				6 6
	Non-Technical Compulsory I Module 1								3
	Mesomodule 3	C1 .:							9
	Non-Technical Compulsory I Module 2	Elective							3
SciTec.2.618	Research Internship						18 weeks		27
SciTec.2.501	Soft Skills						0 2 0 0		3
SciTec.2.705 SciTec.2.801	Master's Thesis Colloquium							18 weeks	27 3

P – laboratory

 $\ddot{U}-tutorial \\$ 

Appendix 1: Curriculum "Scientific Instrumentation"

### **Curriculum for the Master's Programme in Scientific Instrumentation - Part-Time Studies**

### Compulsory Elective Modules

Module No.	Module Name	Semester	V	1 S Ü	j Р	V	2 S	ÜΡ	1	3 7 S		P	V	4 S Ù	ı P	V S	5 SÜP	)	6 VSÜP	ECTS Credits
Postgraduate Ba	asis Modules		•				~	0 1		~	Ü	-	·	~ `	-				, 2 0 1	010010
SciTec.2.088	Solid State Physics		3	0 1	0															6
SciTec.2.032	Microsystems Engineering		2	0 1	0															3
SciTec.2.007	Design of Precision Devices		2		3															6
SciTec.2.017	Introduction to FEM		2	0 0	1															3
Non-Technical (	Compulsory Elective Module 1	[																		
GW.2.110	German as a Foreign Langua	ge I							C	0	4	0								3
GW.2.112	English for Specific Purposes	I							C	0	3	0								3
GW.2.109	Other Foreign Languages								C	0	3	0								3
BW.2.906	Intercultural Communication								C	2	0	0								3
BW.2.907	Compulsory Elective Mod Business Economics	lule from							C	2	0	0								3
Non-Technical (	Compulsory Elective Module 2	2																		
GW.2.111	German as a Foreign Langua	ge II											0	0 4	0					3
GW.2.113	English for Specific Purposes	II											0	0 3	0					3
GW.2.109	Other Foreign Languages												0	0 3	0					3
BW.2.906	Intercultural Communication												0	2 0	0					3
BW.2.907	Compulsory Elective Mod Business Economics	lule from											0	2 0	0					3

**Legend**: V – lecture S – seminar  $\ddot{U}$  – tutorial P – laboratory

Appendix 1: Curriculum "Scientific Instrumentation"

### **Curriculum for the Master's Programme in Scientific Instrumentation - Part-Time Studies**

### Compulsory Elective Modules

Module No.	Module Name	Semester 1 V S Ü P	2* V S Ü P	V S Ü P	4* V S Ü P	5 V S Ü P	6 VSÜP	ECTS Credits
Mesomodule "N	Aicro- and Nanotechnology"							
SciTec.2.031	Micro- and Nanostructures		3 0 0 2		3 0 0 2			6
SciTec.2.113	Thin Films		2 0 0 1		2 0 0 1			3
Mesomodule "S	mart Materials and Sensors"							
SciTec.2.029	Materials for Sensors and Elec	tronics	4 0 0 1		4 0 0 1			6
SciTec.2.061	Selected Topics of Sensor Tech		2 0 0 0		2 0 0 0			3
Mesomodule "S	cientific Computing"							
GW.2.402	Scientific Computing		4 0 0 3		4 0 0 3			9
Mesomodule "N	<b>Metrology and Analytics</b> "							
SciTec.2.014	Gas Sensing and Aerosol Meas	surement	3 0 0 2		3 0 0 2			6
MT.2.902	Instrumental Chemical Analyti		2 0 0 1		2 0 0 1			3
Mesomodule "D	Design"							
SciTec.2.114	Advanced 3D-Design		1 0 0 2		1 0 0 2			3
SciTec.2.115	FEM and Simulation		1 0 0 2		1 0 0 2			3
SciTec.2.116	Precision Instrumentation		2 0 0 1		2 0 0 1			3

<sup>\*</sup> Selection of totally three out of the five offered mesomodules. Two of the three selected mesomodules are taken in 2nd semester, the third mesomodule in 4th semester.

**Legend**: V - lecture S - seminar  $\ddot{U} - tutorial$  P - laboratory

Module No.	Module Name	Sem.	ECTS-Of the M			Type and duration of	Weighting of Examination	Prerequisites for Awarding the	Module Examination Access	Language
11200010 1 (0)	110,000	20111	PM	WPM	WM	examination	Component	Module Grade (Coursework)	Requirements	of Exam

### **Full-Time Studies**

ET.2.903	Embedded Digital Systems	1	6		 SP 90 min.	100 %	SL: Prot., MT o. ST	 English
SciTec.2.042	Optical Instruments	1	6		 SP 90 min.	100 %	SL: Prot., MT o. ST	 English
SciTec.2.111	Physical Materials Diagnostics	1	6		 SP 90 min.	100 %	SL: Prot., MT o. ST	 English
SciTec.2.088	Solid State Physics	1		6	 SP 90 min.	100 %		 English
SciTec.2.032	Microsystems Engineering	1		3	 SP 90 min. AP: R	70 % 30 %		 English
SciTec.2.007	Design of Precision Devices	1		6	 AP: B	100 %	SL: Prot., MT o. ST	 English
SciTec.2.017	Introduction to FEM	1		3	 AP	100 %	SL: Prot., MT o. ST	 English
GW.2.110	German as a Foreign Language I	1		3	 AP	100 %		 German
GW.2.112	English for Specific Purposes I	1		3	 AP	100 %		 English
GW.2.109	Other Foreign Languages	1		3	 AP	100 %		 French Russian Spanish
BW.2.906	Intercultural Communication	1		3	 AP	100 %		 English
BW.2.907	Compulsory Elective Module from Business Economics	1		3	 AP	100 %		 German

Module No.	Module Name	Sem	Sem. ECTS-Credi			Type and duration of	Weighting of Examination	Prerequisites for Awarding the	Module Examination Access	Language
TVIOGGIO I VOI	Trouble I tunio	Sem.	PM	WPM	WM	examination	Component	Module Grade (Coursework)	Requirements	of Exam

Full-Time Stu	<u>dies</u>								
SciTec.2.031	Micro- and Nanostructures	2		6	 SP 90 min.	100 %	SL: Prot., MT o. ST		English
SciTec.2.113	Thin Films	2		3	 SP 90 min.	100 %	SL: Prot., MT o. ST		English
SciTec.2.029	Materials for Sensors and Electronics	2		6	 SP 90 min.	100 %	SL: Prot., MT o. ST		English
SciTec.2.061	Selected Topics of Sensor Technology	2		3	 SP 90 min.	100 %			English
GW.2.402	Scientific Computing	2		9	 SP 120 min.	100 %			English
SciTec.2.014	Gas Sensing and Aerosol Measurement	2		6	 SP 90 min.	100 %	SL: Prot., MT o. ST		English
MT.2.902	Instrumental Chemical Analytics	2		3	 SP 90 min.	100 %	SL: Prot., MT o. ST		English
SciTec.2.114	Advanced 3D-Design	2		3	 AP: B	100 %	SL: Prot., MT o. ST		English
SciTec.2.115	FEM and Simulation	2		3	 AP: B	100 %	SL: Prot., MT o. ST		English
SciTec.2.116	Precision Instrumentation	2		3	 SP 90 min. AP: B	50 % 50 %			English
GW.2.111	German as a Foreign Language II	2		3	 AP	100 %			German
GW.2.113	English for Specific Purposes II	2		3	 AP	100 %			English
GW.2.109	Other Foreign Languages	2		3	 AP	100 %			French Russian Spanish
BW.2.906	Intercultural Communication	2		3	 AP	100 %			English
BW.2.907	Compulsory Elective Module from Business Economics	2		3	 AP	100 %			German
SciTec.2.501	Soft Skills	3	3		 AP	100 %			English/ German
SciTec.2.618	Research Internship	3	27		 AP: Report	100 %			English/ German
SciTec.2.705	Master's Thesis	4	27		 AP: Master Thesis	100 %		All module examinations	English/ German
SciTec.2.801	Colloquium	4	3		 AP: Koll.	100 %	Masterarbeit		English/ German

Module No.	Module Name	Sem.	ECTS-Cof the M			1 1	Weighting of Examination	Prerequisites for Awarding the	Module Examination Access	Language
TVIOUGIC T (O.	Trouble I value	Sem.	PM	WPM	WM	examination	Component	Module Grade (Coursework)	Requirements	of Exam

### **Part-Time Studies**

1 at t-1 line Stu	idies							
SciTec.2.111	Physical Materials Diagnostics	1	6		 SP 90 min.	100 %	SL: Prot., MT o. ST	 English
SciTec.2.088	Solid State Physics	1		6	 SP 90 min.	100 %		 English
SciTec.2.032	Microsystems Engineering	1		3	 SP 90 min. AP: R	70 % 30 %		 English
SciTec.2.007	Design of Precision Devices	1		6	 AP: B	100 %	SL: Prot., MT o. ST	 English
SciTec.2.017	Introduction to FEM	1		3	 AP	100 %	SL: Prot., MT o. ST	 English
ET.2.903	Embedded Digital Systems	3	6		 SP 90 min.	100 %	SL: Prot., MT o. ST	 English
SciTec.2.042	Optical Instruments	3	6		 SP 90 min.	100 %	SL: Prot., MT o. ST	 English
GW.2.110	German as a Foreign Language I	3		3	 AP	100 %		 German
GW.2.112	English for Specific Purposes I	3		3	 AP	100 %		 English
GW.2.109	Other Foreign Languages	3		3	 AP	100 %		 French Russian Spanish
BW.2.906	Intercultural Communication	3		3	 AP	100 %		 English
BW.2.907	Compulsory Elective Module from Business Economics	3		3	 AP	100 %		 German

Module No.	Module Name	Sem.	ECTS-Cof the M			Type and duration of	Weighting of Examination	Prerequisites for Awarding the	Module Examination Access	Language
1.10 00.10	1100010 2 (01110	20111	PM	WPM	WM	examination	Component	Modulo (Prodo	Requirements	of Exam

Part-Time Stu	<u>idies</u>								
SciTec.2.031	Micro- and Nanostructures	2 or 4		6	 SP 90 min.	100 %	SL: Prot., MT o. ST		English
SciTec.2.113	Thin Films	2 or 4		3	 SP 90 min.	100 %	SL: Prot., MT o. ST		English
SciTec.2.029	Materials for Sensors and Electronics	2 or 4		6	 SP 90 min.	100 %	SL: Prot., MT o. ST		English
SciTec.2.061	Selected Topics of Sensor Technology	2 or 4		3	 SP 90 min.	100 %			English
GW.2.402	Scientific Computing	2 or 4		9	 SP 120 min.	100 %			English
SciTec.2.014	Gas Sensing and Aerosol Measurement	2 or 4		6	 SP 90 min.	100 %	SL: Prot., MT o. ST		English
MT.2.902	Instrumental Chemical Analytics	2 or 4		3	 SP 90 min.	100 %	SL: Prot., MT o. ST		English
SciTec.2.114	Advanced 3D-Design	2 or 4		3	 AP: B	100 %	SL: Prot., MT o. ST		English
SciTec.2.115	FEM and Simulation	2 or 4		3	 AP: B	100 %	SL: Prot., MT o. ST		English
SciTec.2.116	Precision Instrumentation	2 or 4		3	 SP 90 min. AP: B	50 % 50 %			English
GW.2.111	German as a Foreign Language II	4		3	 AP	100 %			German
GW.2.113	English for Specific Purposes II	4	3		 AP	100 %			English
GW.2.109	Other Foreign Languages	4		3	 AP	100 %			French Russian Spanish
BW.2.906	Intercultural Communication	4		3	 AP	100 %			English
BW.2.907	Compulsory Elective Module from Business Economics	4		3	 AP	100 %			German
SciTec.2.501	Soft Skills	5	3		 AP	100 %			English/ German
SciTec.2.618	Research Internship	5	27		 AP: Report	100 %			English/ German
SciTec.2.705	Master's Thesis	6	27		 AP: Master Thesis	100 %		All module examinations	English/ German
SciTec.2.801	Colloquium	6	3		 AP: Koll.	100 %	Masterarbeit		English/ German

### Legend:

PM	Compulsory module								
WPM	Compulsory elective module								
WM	Elective module								
PL	Examination								
MP	Oral examination								
SP	Written examination								
AP	Alternative examination								
R	Paper presentation								
В	Assignement paper								
SL	Coursework								
ST	Written test								
MT	Oral test								
HA	Term paper								
Prot.	Written log								
Koll.	Colloquium								

# **Application for the Approval of Internship Work for the Research Internship (27 ECTS credits)**

Mr./Ms.	<del></del>
hereby requests that the following as	ssignment be approved as research internship for the degree programme in
Scientific Instrumentation after the c	urriculum from WS 2011/12.
Email address of the student:	
Description of assignment (an extra s	sheet with details may be added):
Internship provider's name	
and address:	
Name of the internal mentor:	
Phone number:	
I declare that I will observe rules of g	good scientific practice.
Place, Date:	Signature: Student
Support by the internal mentor:  I, the undersigned	will support the student as the internal mentor.
Place Date:	Signature:
Truce, 2 a.e.	Internal mentor
	of the SciTec Department or a Professor of the Jena University of the programme Scientific Instrumentation:
I, the undersigned	hereby second the application in its substance
and will act as the academic supervis	sor.
Place Date:	Signature:
	Signature: Academic supervisor
Approval by the course leader Scie	
* * * * * * * * * * * * * * * * * * * *	The student is instructed to sign an internship contract with the internship work phase, in accordance with the Internship Regulations.
Place, Date:	Signature:
	Course leader Scientific Instrumentation 18 weeks full time required) will count only after the approval date.

# Application for the Approval of Orientation into the Field for a Master's Thesis

Mr./Ms.	
hereby requests that the following assign	nment be approved as orientation into the field for a Master's Thesis for
the degree programme in Scientific Instr	rumentation.
Email address of the student:	
Description of assignment:	
Institution's name	
and address:	
Name of the internal mentor:	
Phone number:	
I declare that I will observe rules of good	d scientific practice.
Place. Date:	Signature:
	Student
Support by the internal mentor:	
I, the undersigned	will support the student as the internal mentor.
Name	
Place Date:	C: an atoma
Prace, Date:	Signature: Internal mentor
	The SciTec Department or a Professor of the Jena University of the programme Scientific Instrumentation:
I, the undersigned	hereby second the application in its substance
Name	
and will act as the academic supervisor.	
Place, Date:	Signature: Academic supervisor
	Academic supervisor
Approval by the course leader Scientif	fic Instrumentation:
The application is hereby approved. If a internship provider prior to the start of the	pplicable the student is instructed to sign an internship contract with the he field work phase.
Place, Date:	Signature:
-,	Signature: Course leader Scientific Instrumentation

### Appendix 5

# Application for the Assignment of the Master's Thesis Topic for the Degree Programme "Scientific Instrumentation"

Surname, First Name:	Registration-No.
Email address:	
Address during Master's phase:	
Topic of the Master's Thesis:	
To effect out a conse	
A ddm.co.	
Internal mentor:	Signature:
Phone:	Fax:
Academic supervisor:	Signature:
Examination Regulations of the SciTec Department Also, I declare that I am not in the process of taki college in the territory to which the German Higher	ng a Master's examination in the same field at any other university of Education Framework Act applies.  examination in the same subject area at a university or college in the mework Act applies.
Jena,	Signature:Student
Approval by the course leader Scientific Instru	nentation:
Topic approved and assigned on:	
Thesis to be submitted by: (Approval date + 18 weeks)	Signature:

# Jena University of Applied Sciences Department SciTec Title of the Master's Thesis (English)

Thema der Masterarbeit (German)

Surname, First Name of the candidate

Date and place of birth of the candidate

Registration number

Name of the academic supervisor

Name of the internal mentor

Date of assignment

Date of submission