Programme-specific appendix to the Education and Examination Regulations 2020-2021

for the Master of Science Programme

Educational Science and Technology (EST)

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1. Structure and content of the programme

1a. Composition of the programme

Table 1 (below) shows the courses which make up the EST programme in EC (1 EC = 28 hours of study load) per unit.

The *generic structure* (of the September – fulltime - enrolment) of the programme is as follows:

Quartile 1A	Quartile 1B	Quartile 2A	Quartile 2B
Trending topics in educational science and technology 201200034 (10 EC)		Trending topics in educational science and technology (2nd run) 201200034 (10 EC)	
Team learning at work 201500010 (5 EC)	HRD & Technology in a live context 201600126 (5 EC)	Regulation and facilitation of workplace learning 201200031 (5 EC)	Leadership and organisational change 201200032 (5 EC)
Designing learning & performance support 191970340 (5 EC)	Assessing and monitoring performance in education 201900134 (5 EC)	Innovative technology-based learning environments 201400002 (5 EC)	Teacher learning and development 201200027 (5 EC)
Learning and Instruction * 192914040 (5EC)		Learning and Instruction 192914040 (5EC)	Educational measurement 201500149 (5 EC)
Research Proposal EST 201200035 (5 EC)	Research Proposal EST 201200035 (5 EC)	Research Proposal EST 201200035 (5 EC)	Research Proposal EST 201200035 (5 EC)
Intro FP / Find a FP	Final Project EST 201200036 (25 EC)		

* Retake of block 1A is in block 2A, not in1B!

Global talent management 201500086 (5 EC)		HRM and innovation 201500087 (5 EC)	
		HRM and technology design 201500088 (5 EC)	

	Core Course – obligatory
	Elective Courses HRD
	Elective courses EDU
	Research Proposal
	Final Project
	Extra courses from preferred partners

Table 1: Curriculum EST 2020-2021.

1b.   Study load of the programme

A student's study trajectory in the one-year (60EC) EST programme consists of 30 EC course work and 30 EC Final Project (i.e. 5 EC research proposal plus 25 EC project work).

More specific, all students take the obligatory (10 EC) core course 'Trending Topics in Educational Science and Technology', which is offered twice per year, since the EST programme has two (2) terms of enrolment: September and February.
Next to this obligatory course, students have to take a number of electives courses (in total 20 EC).

Full information on the options in this respect can be found in section 4d (Elective programme) of this programme-specific appendix of the Education and Examination Regulations.

1c.   Honours programme

For excellent students the University of Twente offers three (3) different extra-curricular master's honours programmes of 15 EC each. These programmes have a distinctive profile which allows students to develop themselves in one of the three roles: as an organiser, designer or researcher.
These programmes are:
- MSc Change leaders
- MSc Design honours
- MSc Research honours

More information on these programmes and the corresponding selection procedures can be found at the UT honours programmes website https://www.utwente.nl/en/excellence/master/

2. Goals and objectives of the programme

The main aim of the Master's degree programme Educational Science and Technology (EST) is to deliver competent researchers who are scientifically schooled, independent and critical educational designers, decision makers, and advisers who can contribute to the subject area of education in general and to their chosen area of specialisation in particular. To reach this goal the programme has established the following standards:

- Domain orientation:
  Graduates have a firm and broad overview of education and of the specialty areas within, and specific expertise in one of the specialty areas that can be used productively and creatively in various related professional contexts.
- Design competency:
  Graduates are able to systematically frame up, fill in, augment, evaluate, and implement designs to support learning environments in various education and training contexts.
- Research competency:
  Graduates are able to systematically collect, analyse, and interpret research data, to draw conclusions from the data, and on the basis of that advise or decide on possible alternatives and activities to be conducted, particularly in a design context.
- Advice competency:
  Graduates are able to advise (educational) organizations, in part based on the three competencies mentioned above, with regard to the implementation of better and more efficient learning environments and organizational as well as policy related arrangements for learning and teaching.
- Academic reflection:
  Graduates are able to critically reflect on processes, resulting products, and achieved results from systematic and relevant scientific, social-cultural, and ethical perspectives in order to contribute to the professional development of the educational specialist and to a broadening and/or deepening of the scientific subject area.

The main focus of the master's degree programme Educational Science & Technology (EST) is on the design and evaluation of learning arrangements in schools and organisations. This might be the instruction of young children at primary school, of young adults during their vocational education, or adult employees in a company, such as sales managers or teachers receiving in-service training or training on the job. In the EST programme students acquire knowledge about theories of learning and assessment, curriculum design and implementation, learning technologies, effective training approaches and learning interventions. Students also learn how to design and evaluate different learning arrangements and translate these into advice and solutions for practical problems.

The EST programme prepares graduates to work in the contexts of formal schooling and/or continuing professional growth in organisations (e.g. business, government, non-profits). While most courses draw on examples from either education or organizations, some offer opportunities for both.

Graduates from the EST programme will become scientific educational professionals, experts who connect scientific research, scientific design and (their own or future) practice. The outcome of their expertise is based on educational questions and problems from practical contexts (both schools and organisations), which they translate into research questions and which they try to answer by applying a systematic approach, thus finding appropriate solutions for the specific problem. The result of this approach is a design (or a set of designs), which is tested in the context of the problem to see if that solution helps realising an improvement or innovation. This evaluation does not only lead to an improvement or innovation, but it also leads to more knowledge and the forming of new theories. The systematic, technological, and design- and evaluation-based orientation characterises the EST programme and distinguishes our programme at the University of Twente from other education-related degree programmes in the Netherlands. Graduates work in a wide range of organisations, from government, ministries, publishers and educational support services to universities, higher education

institutes and multinational companies. A number of graduates have started their own education and training consultancy bureaus.

For those interested in the context of formal education
Courses situated in the field of formal education (EDU) focus mainly on teacher and school development, school effectiveness, educational technology, and instructional design. They offer learning opportunities related to primary, secondary or tertiary education. With these courses, students gain expertise in planning, developing, and implementing innovative learning scenarios.
Questions frequently asked in this context are:
- How can learning innovations be designed and implemented?
- How can technology be used and integrated into education?
- How can schools and teachers be supported in the design, development and implementation of innovations at both school and classroom level?
- How can teachers be empowered in their own professional development for implementing innovative (technology-based) learning innovations?
- Can school performance be improved by giving schools feedback on the level of their performance, e.g., by means of feedback from digital monitoring systems?
- To what degree do school leadership, school culture and the teamwork between teachers influence the effectiveness of schools?
- Do schools perform better as a result of school inspections or are the improvements only superficial?

The applied character of EST is visible in all courses of the programme. Courses in which the context of formal education features prominently offer opportunities to:
- Understand and analyse different theories and paradigms related to educational design and – implementation, teacher and school development, school effectiveness and ICT in a variety of educational contexts and indicate what they mean for practiceDd
- Plan, design, and implement innovative educational trajectories to increase its quality, and able to assess the effect of these curricula.
- Improve the performance of schools by taking school leadership, school culture and teamwork between teachers into account.
- Conduct scientifically robust and practically relevant research in, for, and with schools
- Reflect on the various core issues in the field of EDE and on his or her own position

For those interested in the context of human resource development
Human Resource Development (HRD) focuses on how adults learn and develop professionally. Leadership, talent development, and lifelong learning are among the focal points in this track. While this area overlaps with the professional development of teachers, it also includes the learning of adults in businesses and other organisations.
Questions frequently asked in this context are:
- How do people learn during their work?
- How do people become experts in their field?
- How can one facilitate workplace learning and professional development?
- What are effective training programmes and how to evaluate these?
- How can one manage learning and knowledge sharing in a company?
- How do organisations change and do HRD professionals assist in this process?
- What is the role of new media and technology in learning?

The applied character of EST is visible in all courses of the programme. Courses in which the context of human resource development features prominently offer opportunities to:
- Understand and analyse different HRD theories and paradigms, and what they mean for practice,
- Design innovative and well-thought interventions to increase learning and development in a company or institution,
- Advise companies and institutions on questions related to learning and development of their employees,
- Conduct research on HRD problems and know how to use research for designing good learning interventions and giving solid advice,
- Reflect on the various core issues in the field of HRD and on his or her own position in this.

3. Examination and exams

3a   Examination

The EST programme has one (1) examination, i.e. the master's examination after 1 year. The master's examination is deemed to have been successfully completed if all exams of the agreed units of study, including the Final Project (master's thesis), have been completed with a 6 or higher (NB: Partial grades between 5.5 and 6 are always rounded off, e.g. 5.5 yields a 6.)

3b.   Exam formats

The exam formats of each unit of study in the EST programme is shown table 2
Written exams are individual tests, unless specified otherwise. The weight attributed to each of the exam components is stipulated in the course's electronic learning environment, and made public before the start of the course.

Note:
In addition to Article 4.1 of the BMS EER, in the EST master's programme the following applies:
If a unit of study has been completed successfully (final unrounded grade 5.50 or more) then this grade is final. If a student feels that there are exceptional circumstances that justify an excemption from this rule (and thus justify an extra opportunity), he/she has to send a motivated written request to the Examination Board. Such an exemption can only be granted once per student.

Quartile	Course code	Name (+ study load)	Examiner(s)*	Exam formats
1A	201500010	Team learning at work (5EC)	**Dr. M.D. Endedijk** Dr. A.M.G.M. Hoogeboom N. Goossen BSc	Written exam, Group Assignment
1A	191970340	Designing learning and performance support (5EC)	Dr. P.M. Papadopoulos	Assignment
1A & 2A	192914040	Learning and instruction (5EC)	**Dr. A.M. van Dijk** Dr. J. ter Vrugte	Written exam
1A	201500086	Global talent management (5EC)	Dr. J.G. Meijerink	Assignments, Essay
1B	201600126	HRD & technology in a live context (5EC)	Dr. B. Kollöffel	Assignments
1B	201900134	Assessing and monitoring performance in education (5EC)	**Dr. M. van Geel**, Prof.dr. A.J. Visscher, Dr. H.W. Luyten Dr. K. Schildkamp	Written exam
1A & 1B 2A & 2B	201200034	Trending topics in educational science and technology (10EC)	Dr. A.M. van Dijk (coordinating teacher)	Assignments (e.g., written exam, essay, presentation, group assignment)
2A	201200031	Regulation and facilitation of workplace learning (5EC)	Dr. M.D. Endedijk (& Dr. M. Wijga (to be decided)	Written (take-home) exam, Group assignment
2A	201400002	Innovative technology-based learning environments (5EC)	Dr. T.H.S. Eysink	Assignment
2A	201500087	HRM and innovation	**Dr. A.C. Bos-Nehles**, M. Renkema MSc	Group assignments; Individual

				assignment
2A	201500088	HRM and technology design	**Prof.dr. T. Bondarouk**, Drs. J. van Mierlo	Written exam, Assignment
2B	201200032	Leadership and organisational change (5EC)	Dr. M.D. Hubers	Written exam, Assignment
2B	201200027	Teacher learning and development (5EC)	**Dr. M. van Geel**, Prof.dr. A.J. Visscher	Take home written exam, Group assignment
2B	201500149	Educational measurement	**Dr. M.C. Heitink**, Prof.dr.ir. B.P. Veldkamp,	Assignments
1A & 1B 2A & 2B	201200035	Research proposal EST (5 EC)	**Dr. B.J. Kollöffel,** Dr. C. Poortman, Dr. H. van der Kolk, Dr. H. Leemkuil	Research proposal
	201200036	Final project EST (25 EC)	First mentor (as indicated on the final project contract) Second mentor (as indicated on the final project contract)	Project report and presentation

Table 2: List of units of study, examiners, and exam formats

Note:
In case more than one (1) examiner per unit of study is mentioned, the in bold mentioned examiner has been designated as the one who holds first responsibility.

3c.   Prerequisites and required sequence of exams

Upon meeting the entry requirements of the MSc degree programme EST, students are entitled to participate in all EST courses.
There is no required sequence of exams, but students are strongly recommended to take and to complete the course Trending topics in educational science and technology (201200034) first.

4. General information

4a. Admission to the programme

The Admission Committee assesses all applicants to the MSc Educational Science & Technology (EST) programme on an individual basis. The assessment of the applicant's skills is based on formal as well as content-related admission criteria.

The *formal criteria* are as follows:

> A. Bachelor's degree or equivalent
> B. **Note**: for international (i.e. non-Dutch students) only:
> IELTS minimum overall score of 6.5 on the IELTS (where each minimal sub score is 6.0) or equivalent,
> Please check the university's website for underlined details and exemptions:
> http://www.utwente.nl/master/how-to-apply/internationaldegree

The *content-related admission criteria* require that a student possesses and demonstrates evidence on sufficient knowledge and skills concerning the following:

> C. The content of the domain of educational science and technology.
> D. Design methodology.
> E. Research methodology.
> F. Research techniques, including the use of statistics for data analysis.

Ad C. Content of the domain
The domain of Educational Science and Technology can be characterised by the following: a field that encompasses the analysis of learning and performance problems; the design, development, implementation, evaluation, and management of educational and training processes, resources, and arrangements intended to improve learning and performance in a variety of settings. A student meets the domain-specific admission criteria if he/she possesses a Bachelor's or Master's level degree in a domain that is similar or related to the domain of this definition, and/or if he/she has substantial relevant work experience from which he/she has mastered the aforementioned conceptual knowledge.

Ad D. Design methodology
This is a typical content characteristic of all behavioural Bachelor's and Master's programmes in our Behavioral, Management and Social Sciences Faculty, aiming at educating scientific designers. This methodology for systematic problem solving aims to support science-based, systemic approaches and processes for the development, the implementation, and the evaluation of solutions for problems in education and training. To give evidence that a future student has mastered this methodology, he/she has to send us an overview of relevant courses taken and/or reports of systematic design projects he/she has intensively been involved in.

Ad E. Research methodology
This refers to the main concepts, procedures, and methods used in social science research, and which aim at systematic, conceptual (literature) analysis, modes of data collection, data analytical schemes, and procedures for interpretation of findings, in order to better understand social phenomena and processes, and/or to support all levels of making choices in and for social reality. This methodology supports the systematic design, execution and evaluation of research activities. A student's basic mastery of this methodology should be proven by courses which he/she has taken in this area, and/or reports of research projects or activities he/she has been involved in substantially.

Ad F. Research techniques, including the use of statistics for data analysis
This area is dedicated to the skills and understanding of techniques for collection and for analysis of both quantitative and qualitative data. If a student masters this area he/she is both able to apply descriptive statistics (distribution, correlation, regression, cross tabling), theory of probability

(calculation, expectation, variance, binomial distribution), and aspects from inductive statistics (average based conclusions with known population deviation) as well as applying scientific analytical methods in interviews, observation, and questionnaires, analysing texts, and coding text fragments. Experience with the use of SPSS or a comparable computer-based statistical package is part of this mastery. Evidence of this can be presented by content review of courses which he/she has taken, and/or use of these techniques in research, demonstrated by means of a report or an article.

Evaluation of the entrance criteria

The programme's Admission Committee will review the information and documents presented and will decide whether a student meets all stated criteria sufficiently. The Admission Committee comprises of the programme co-ordinator, the study advisor, and the full professor who holds responsibility for the quality of the programme. The latter may delegate his membership to a member of the programme's scientific staff, i.e. to one of the programme's teachers.

Evaluation of these entrance criteria may result in one (1) out of two (2) alternative decisions by the Admission Committee:

1. If a student meets all formal and content-related criteria he/she will be admitted to the EST Master's programme.
2. If a student does not meet the entry requirements, to be decided by the Admission Committee, he/she will be offered the possibility of taking the EST pre-Master's programme. A student may ask for exemptions from one or more units of study of the pre-M trajectory, upon formal enrolment/registration, at the Examination Board.

4b. Language

The language of communication in the MSc programme Educational Science and Technology is English.

This premise requires additional explanation:
*   Study materials are in English.
*   Classes (lectures, seminars, workshops, practicals, and others) are taught in English.
*   Exams and assignments are composed in English and students have to complete all exams and assignments in English.
*   Presentations (including the Final Project presentation) have to be prepared in English
*   Non-formal (written or oral) communication between a student and an instructor may revert to Dutch in case no non-Dutch students are involved.
*   Students are supposed to be aware of the aforementioned rules with regard to the use of English and Dutch.

Note: students who started their EST master's degree programme before 1 February 2013 will be subject to a transitional rule that says that students who master Dutch are allowed to complete their tests and assignments in Dutch as long as no non-Dutch students are involved.

4c. International agreements

Per 1 September 2018 a double degree (DD) programme with Ludwig Maximilans University (LMU) in Munich, Germany will be offered. This 120 EC DD programme is called "Learning Sciences and Technology". The concerned formal contract (signed in Spring 2018 by the executive boards of LMU and the UT) is approved by the EST Examination Board. Full information on this 120 EC DD trajectory (incl. application procedures, and curricula) can be obtained from appendix A.

4d.   Elective programme

The programme's elective options can be found in Table 1 (Curriculum EST 2020-2021). Typically, students select four (4) elective courses (5 EC each) out of the set of 10 electives presented.
If so desired, students may opt to fulfil their elective requirements with a maximum of 2 courses (10 EC) that have been approved by the Examination Board for this purpose and are offered by partners in the faculty of BMS. These courses are:
- Global talent management (201500086)
- HRM and innovation (201500087)
- HRM technology design (201500088)

4e.   Programme Committee

The programme committee is set up for each programme or group of programmes. The committee has the task to advise on enhancing and guaranteeing the quality of the programme(s).
The members of the EST programme committee are appointed by the Dean. The members are recruited from students and teaching staff of the Educational Science and Technology programme on an equal basis (50% students and 50% staff). The most up-to-date composition of the committee and its formal role and tasks can be found on the webpage of the programme committee.

4f.   Examination Board

The Examination Board is the body that determines in an objective and expert way whether a student meets the conditions under the Education and Examination Regulations (EER) concerning the knowledge, comprehension and skills required in order to obtain the Master of Science (MSc) degree. Members of the Examination Board are appointed by the Dean of the Faculty.

The Board's tasks are described in the generic (i.e. non programme-specific) part of the EER. More information, including the most up-to-date composition of the Board can be found on the webpage of the Examination Board.

5.   Transitional arrangements

Not applicable.

6. Study advice first year

Not applicable

7. Additional subjects

7a.   Specific EST programme demands

Courses to be obtained and exemptions.
Students must take and successfully complete a minimum of 30 ECs in EST-approved courses. Exemptions from specific courses (pertaining solely to the level, content and quality of exams or assessments previously taken by the student; or knowledge, insight and skills acquired by the student outside of the sphere of university education), granted by the Examination Board may not be applied toward the 30 ECs of courses to be obtained for the EST degree. In that case, the student must follow a flexible programme as referred to in Article 7.3h of the Act. The Examination Board assesses

whether a flexible programme is appropriate and consistent within the domain of the EST programme and whether the level is sufficiently high in light of the final attainment targets of the programme.

Validity of assessment results (duration of full course or sub-unit grades):
In contrast to the generic rule (Article 4.8.1) that the validity of a course result has no limitation, the validity of a course result in the EST programme is max. 5 years. If a student would like to extend the duration of validity for a particular course, then the student must submit a motivated request to the programme's Examination Board, which clearly demonstrates that the student still possesses the required competences which are connected to the course in question.

In contrast to the generic rule (Article 4.8.2) concerning sub-unit grades within courses, each assessment result (sub-grade) is valid until the end of the ongoing academic year, the subgrades in the EST courses stay valid till the end of the subsequent academic year.
However, there is 1 exception; With regard to the EST course Trending Topics in Educational Science and Technology (201200034) the following applies: The grades for each trending topic assessment stay valid until the end of the following semester. (NB: Trending Topics is offered each semester). If a student does not pass the course (i.e. complete all trending topics' assessments) the 2nd time, the student loses all grades previously earned. Consequently, the student has to re-take the entire course.

7b.   Graduation with distinction

If upon sitting the Master's examination, the student has shown evidence of exceptional capability, 'Cum Laude' (with distinction'') will be awarded on the degree certificate.
A student is considered to have exceptional capability if each of the following conditions is met:
- the average mark awarded for the units of study of the Master's examination is at least 8.00;
- no graded work was re-done;
- in the determination of this average, the units that were not evaluated with a numerical mark or for which an exemption was granted are not considered
- no unit of study was graded less than a 7.00;
- the mark for the final unit (Final Project) is at least a 9.00.

In special cases and despite not fulfilling these conditions, a member of the student's *Graduation Committee* is entitled to propose a "Cum Laude" award to the Examination Board.
Besides, the Examination Board will only award a "Cum Laude" designation in case the Final Project has been completed under the supervision of and has been assessed by a faculty's examiner.
The rules applied by the Examination Board can be found in the Rules & Guidelines of the Examination Board. See https://www.utwente.nl/en/bms/examboard/for-students/

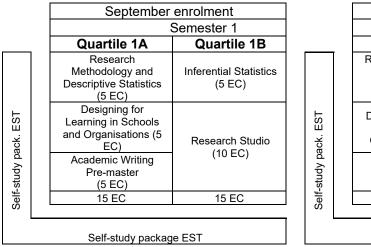## 7c.   Pre-Master's programme Educational Science and Technology (EST)

The pre-Master's programme consists of (generic academic and domain-specific) units of study that prepare a student for applied, design or evaluation-oriented, scientific reasoning and research during the Master's trajectory Educational Science and Technology.
Therefore, all pre-Master's units of study (to be decided by the Master's programme Admission Committee) must be successfully completed before one can formally begin the Master's programme.

The full pre-master's programme comprises 30 EC.

The pre-Master's programme has two (2) terms of enrolment (September and February). Therefore, the following structure applies:

Full-time programme = ½ year = one semester

September enrolment			February enrolment		
	Semester 1			Semester 2	
	Quartile 1A	**Quartile 1B**		**Quartile 2A**	**Quartile 2B**
Self-study pack. EST	Research Methodology and Descriptive Statistics (5 EC)	Inferential Statistics (5 EC)	Self-study pack. EST	Research Methodology and Descriptive Statistics (5 EC)	Inferential Statistics (5 EC)
	Designing for Learning in Schools and Organisations (5 EC)	Research Studio (10 EC)		Designing for Learning in Schools and Organisations (5 EC)	Research Studio (10 EC)
	Academic Writing Pre-master (5 EC)			Academic Writing Pre-master (5 EC)	
	15 EC	15 EC		15 EC	15 EC
	Self-study package EST			Self-study package EST	

Part-time programme = 1 year = two semesters

	Semester 1		Semester 2	
	Quartile 1A	**Quartile 1B**	**Quartile 2A**	**Quartile 2B**
Self-study pack. EST	Research Methodology and Descriptive Statistics (5 EC)	Inferential Statistics (5 EC)	Designing for Learning in Schools and Organisations (5 EC)	Research Studio (10 EC)
	Academic Writing Pre-master (5 EC)			
	10 EC	5 EC	5 EC	10 EC
	Self-study package EST			

Registration

For all students (including part-time students), the pre-master's programme must be completed within one (1) year. Participants are eligible to take each course only once, and each course offers two (2) chances for assessment, i.e. one re-take is possible for each graded exam, assignment or project. Students failing to succesfully complete any course (grade 5.50 or higher) will be dismissed from the pre-master's programme Educational Science and Technology. This also applies to students who have started other pre-master programmes at the University with content that is part of the Educational Science and Technology pre-master curriculum. Specifically, students who have taken Research Methodology and Descriptive Statistics, and/or Inferential Statistics, and/or Academic Writing and not passed after the allotted two attempts are not eligible for the pre-master Educational Science and Technology.

Language in the pre-master's programme

The language of communication in the pre-master's programme Educational Science and Technology is English.

This premise requires additional explanation:
• Study materials are in English.
• Classes (lectures, seminars, workshops, practicals, and others) are taught in English.

- Exams and assignments are composed in English and students have to complete all exams and assignments in English.
- Presentations (including the Final Project presentation) have to be prepared in English
- Non-formal (oral or written) communication between a student and an instructor may revert to Dutch in case no non-Dutch students are involved.
- Students are supposed to be aware of the aforementioned rules with regard to the use of English and Dutch.

Note: the EST pre-master's programme can also be followed as a so-called *transfer minor*, as agreed upon with Dutch Universities of Applied Sciences (HBO)

Appendix A: LMU-UT Double Degree contract

See separate document