

Combination program Industrial Design - Science Education and Communication

Motivation

ID students are successfully following the Educatieve Minor leading to a 2nd teaching degree in physics during their bachelor ID since 2015. Some of them enjoy teaching so much they want to continue to a 1st teaching degree, one way or the other. The road to this 1st was blocked before, due to their lack of physics knowledge, required for a 1st teaching degree in these subjects. ESoE has permission from the Ministry for Education to offer a 1st teaching degree in O&O and NLT, combined with a 2nd teaching degree since September 2016. This road is open to ID master students who wish to start or continue a 1st teaching degree.

Master SEC after BSc ID (2-year)

Subject	ec
Physics subjects, technology and society subjects, general STEM subjects, company internship, free elective	35
Pedagogy of O&O 1 and 2 (Including pedagogy NLT and 2nd teaching degree: physics or technology)	10
General educational psychology 1 and 2	7.5
Internship P1, P2, P34, P5 including reflection and professional identity development	30
STEM material design theory and project	7.5
Research in educational science	30
Total	120

-intermezzo: Dutch secondary education

A 2nd teaching degree can be achieved by successfully completing the Educatieve Minor in a certain direction (for ID: physics and technology) when stemming from a matching university bachelor ([verwantschapstabel](#)). Such a degree allows students to teach in the first three years of theoretical secondary education (VMBO-t, havo & vwo). A 1st teaching degree of old was only valid for teaching one subject (say, physics, or chemistry, or English). With the arrival of *Onderzoek & Ontwerpen – O&O (Research & Design)* and *Natuur, Leven & Technologie – NLT (Nature, life, & technology)* as subjects in secondary education, teachers in related subject areas were allowed to teach these.

For O&O, the Technasium Foundation had the exclusive right to officially certify teachers for O&O. University teacher education decided it was time to get involved, when the subject was incorporated into elective subjects in the national exam program. This led to the design of the combined 1st in O&O-NLT and 2nd in β degree program at ESoE. A thorough university teacher education program that includes attaining the Technasium certificate, through cooperating with the Technasium Foundation, was established. Since ESoE does not offer 'technology' the student can follow the pedagogy of technology at 3TU-partners TuDelft or UTwente.

ID-students can now opt for a Master SEC in O&O-NLT *after* their master's in industrial design is completed. Alternatively, they can complete the *Educational Track* in this direction by filling in elective subjects throughout their Industrial Design study with educational subject and doing extra 'study points' (more than the minimum of 180 Bsc + 120 MSc).

A 1st O&O-NLT teaching degree program for a student that has completed a master ID would encompass:

Master SEC after completing Master ID	
Subject	ec
<i>Physics if necessary</i>	max 15
Pedagogy of O&O 1 and 2 (Including pedagogy NLT and 2nd teaching degree: physics or technology)	10
General educational psychology 1 and 2	7.5
Internship P1, P2, P34 including reflection and professional identity development	25
STEM material design theory and project	7.5
Research in educational science	10
Total (max)	75

Educational Track SEC during Master ID	
Subject	ec
<i>Physics if necessary</i>	max 15
Pedagogy of O&O 1 and 2 (Including pedagogy NLT and 2nd teaching degree: physics or technology)	10
General educational psychology 1 and 2	7.5
Internship P1, P2, P34 including reflection and professional identity development	25
STEM material design theory and project	7.5
Total (max)	65

Both options include the possibility of doing the ‘honors-oriented’ variant ‘**Leeratelier**,’ where ambitious students define their own learning path to reach the learning goals of the Master SEC, guided by a school teacher, an ESoE Coach and working together in a professional learning community of like-minded students.

Given the nature of the programs leading to Master SEC that ID students can already follow, it is only a small step to make a formal double degree possible for ambitious and motivated ID students. Such a track may include physics subjects depending on the choice in teacher degree the student makes.

Industrial design has strands, one of which is User & Society. A number of Phd and master students have already found their way to ESoE for help in designing and testing a product for education / learning. A formal double degree track would strengthen the bond between design and education.

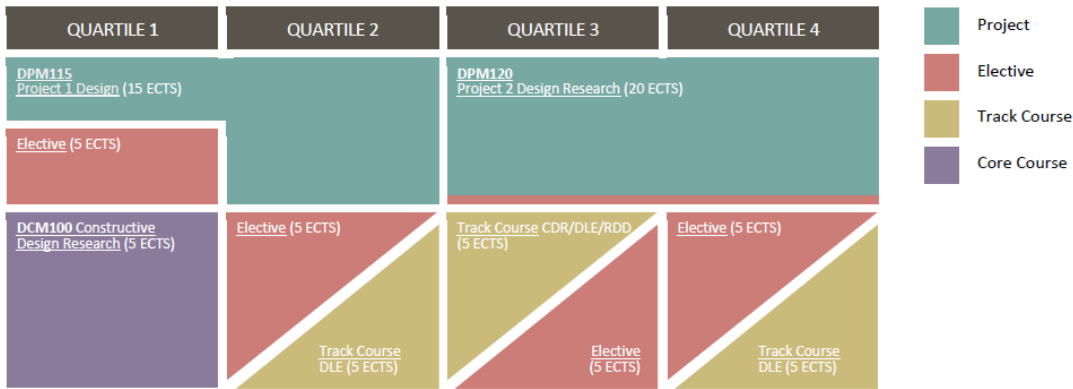
Proposal

The faculty ID and the ESoE agree on the combination program ID-SEC detailed in this document. The regulations for double-degree programs¹ allow for a different number of electives and research combination when a combination program with het Master Science Education is concerned. The combination program SEC-ID consists of a total of 155 - 185ec². The option to follow a double degree program Science Education and Communication (SEC) and Industrial Design (ID) is open for the specialization O&O with a teaching degree in physics or technology (i.c.w. TU Delft/Utwente). De student completes 10ec physics subjects for a physics 2nd teaching degree.

De student takes the complete first year of the Master ID according to the schedule:

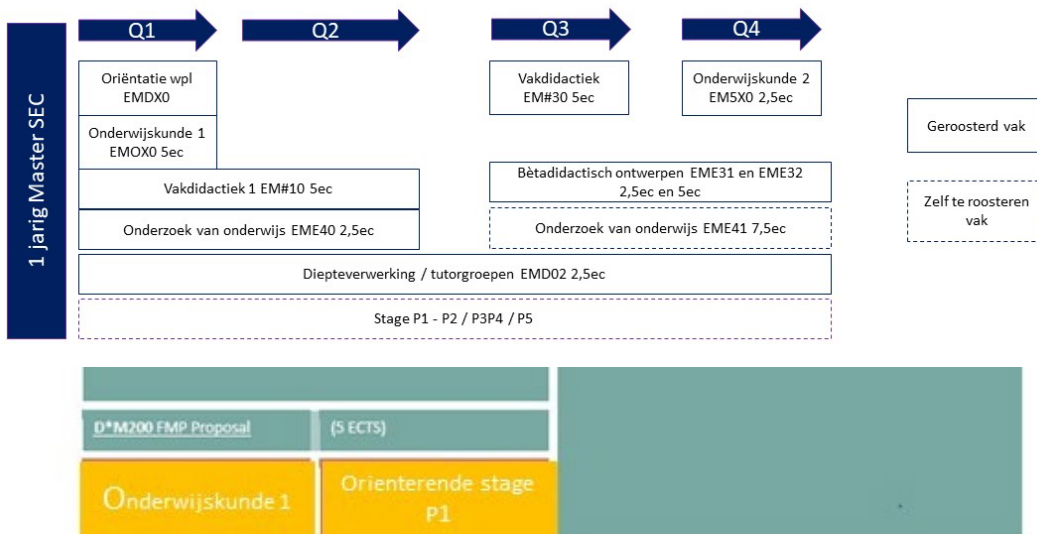
¹ <https://studiegids.tue.nl/organisatie/regelingen-gedragcodes-en-richtlijnen/studentenstatuut/tentamens-en-examens/?L=#c7920>

² Afhankelijk van de SEC richting (O&O met 2^o graad natuurkunde of techniek) moeten voor de master SEC vakinhoudelijke vakken worden gevolgd.



In the second year of the Master ID the electives in Q1 and Q2 are replaced by subjects from the Master SEC. For instance, educational psychology 1 and internship P1.

In the third year the student can follow the remaining Master SEC subjects with homologation subjects in physics if necessary.



Students can apply for exemptions for Master SEC subjects when they have completed the Educational Minor during their Bachelor program. Students with such an exemption cannot replace the electives from year two in Master ID with SEC subjects, since that would lead to a too small number of ec (<150) for a double degree program.

Graduation from the Master SEC can only take place after graduation from Industrial Design (final grades must be in Osiris).

The PER for the Masters ID and SEC apply to the combination program ID-SEC described above. Special attention is drawn to the double-degree regulations in appendix one of the PER Master SEC.