

## **Spikker - Sieverink, B. (CES)**

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**Subject:** OER CreaTe  
**Attachments:** OER Bachelor 2015 - Creative Technology Programme Appendix(4).pdf

Dag Opleidingscommissie,

Zoals afgelopen donderdag tijdens de vergadering afgesproken, hierbij de OER CreaTe

Wijzigingen t.o.v. vorig jaar zijn geel gemarkeerd (maar misschien niet helemaal consequent)

Bronnen van wijziging:

Derde jaar TOM

Er is een artikel over vertrouwelijkheid toegevoegd, EWI breed.

Ik hoop alle opmerkingen van de OLC correct te hebben verwerkt.

Er komt zo dadelijk nog een transitional arrangements appendix (bijlage met overgangsregelingen)

Groet

Gerrit

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# **DRAFT PROGRAMME APPENDIX TO THE TEACHING AND EXAMINATION REGULATIONS OF THE BACHELOR'S PROGRAMME CREATIVE TECHNOLOGY**

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The regulations in this appendix form an integral part of the teaching and examination regulations of the bachelor's programme Creative Technology of the Faculty of Electrical Engineering, Mathematics and Computer Science of the University of Twente.

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PARAGRAPH 1  
THE PROGRAMME SPECIFIC ISSUES OF ARTICLES 3.1 AND 3.2.  
(WHW 7.13.2) OF THE REGULATIONS<sup>1</sup>

Art 1.1 - PROGRAMME CONTENTS AND EXAMINATIONS(A)

1. Students who were already enrolled for the Bachelor's programme Creative before September 1, 2013, pass the bachelor's examination by completing<sup>2</sup> the units of study of tables 1a, 2a and 3a.
2.
  - a. The units of study of tables 1a are no longer taught as separate units (as of September 1, 2013). Provisions for completing these units are in the Transitional arrangements appendix.
  - b. The units of study of table 2a are no longer taught as separate units (as of September 1, 2014). Provisions for completing these units are in the Transitional arrangements appendix.
  - c. The units of study of table 3a are no longer taught as separate units (as of September 1, 2015). Provisions for completing these units are in the Transitional arrangements appendix.
3. Students who are enrolled for their first year in Creative Technology on or after September 1, 2013, pass the bachelor's examination by completing the units of study of table 1b, 2b and 3b.
4. For (almost) every unit of study, with the exception of the units referred to in Article 1.1.2, supervised (teaching) activities are organized. The nature of the activities is included in the tables 1b, 2b, and 3b, using the following abbreviations
  - A (Assignments) Students work on assignments, under supervision of a teacher and/or assistant.
  - D (Deliverable) a result is being produced, which can be demonstrated and observed; the product is more than mere text for reading.
  - G (Group) students collaborate in a group.
  - I (Interaction) questions are raised, discussed and answered, in collaboration between students and teacher.
  - L (Lectures) an expert speaker addresses the students.
  - P (Presentations) the students address their fellow students.

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<sup>1</sup> The regulations are: the teaching and examination regulations for Creative Technology. The letters (a-m) in the article titles of this paragraph refer to the corresponding items in WHW 7.13.2

<sup>2</sup> To complete a unit means to pass the unit's assessment with a sufficient result.

5.
  - a. At the end of the first year students who were already enrolled before September 1, 2013, must choose between two options for a specialization course in their second year: Smart Technology and New Media.
  - b. At the end of the first year students who were first enrolled on or after September 1, 2013, must choose between two options for module 5 in their second year: Smart Technology and New Media.
6. Students have to choose courses with a study load of 30 EC in semester 5 (the first half of the third year of the programme),
  - a. At the end of the second year students who were already enrolled before September 1, 2013, must choose courses in their *profielingsruimte*
    - students can take courses to prepare for further study in a Master's programme,
    - students can take a standard or individual minor programme
    - students can take one semester of courses at another (foreign) university (which is in fact a special kind of an individual minor),
    - students can take the opposite course of their second year specialization (15 EC), and combine this with a choice of other courses with a 15 EC study load in total, to make an individual 30 EC minor,
    - and possibly more.
  - b. At the end of the second year students who were first enrolled on or after September 1, 2013, must choose modules for their *minor*
    - students can take pre-Master modules to prepare for further study in a Master's programme,
    - students can take one or more HTHT modules
    - students can take one semester of courses at another (foreign) university,
    - students can take one or more "deepening" modules, one of those can be the opposite module of their first module in the second year.
    - students can take one or more "broadening" modules, modules which belong to other UT Bachelor's programmes.
    - and possibly more.
7. The student's choice of courses and modules in semester 5 (cf. item 6 above) must meet the requirements of Art 1.12 of this appendix.
8. Students **who were already enrolled before September 1, 2013** have to choose *electives* in their third year totalling at least 15 EC. Their choice of electives serves at least two purposes:
  - students are confronted with a view on and research into the human-technology relationship which is largely inspired by behavioural or management sciences,
  - students work on ethics and professional standards for design.

Table 3a contains the list of electives. The text below the table elaborates the options for a student to deviate from this list.

9. To pass their degree students complete a graduation work.
  - a. In their Final project at the end of their third year students who were already enrolled before September 1, 2013 complete graduation work with a study load of 15 EC.
  - b. Students who were first enrolled on or after September 1, 2013 complete graduation work in two parts. The first part is contained in the Pre Final module, the second part in the Final module. The combined study load of the two parts is 17 EC.
  - c. Graduation work consists of
    1. A design project, where context and goals are set preferably by an external party.
    2. A graduation report, with appendices when necessary, in which the student renders account of the graduation project and the design approach, and describes and documents literature search, surveys and experiments conducted during the project, as well as the prototypes and other deliverables which result from the project.
    3. A summary of the graduation report.
    4. A public presentation and defence of the graduation work.
  - d. Students enrolled before September 1, 2013 can start graduation work only at the beginning of a semester, i.e. in September or February. The deadline for their graduation work is at the end of the semester in which it started. This period of time cannot be extended. If the deadline is not met, the examiners will assess the graduation work anyway. This may result in a fail.
  - e. The Pre Final and the Final modules are taught each semester; the Pre Final module in the first half (blocks 1A and 2A), the Final module in the second half (blocks 1B and 2B). Students cannot take the Pre Final module after the Final module. Students must take the Pre Final and the Final module consecutively in the same semester.
- 10 The Examination Board may decide that students pass their examination even if some results are insufficient. The rules set by the Examination Board for passing examinations are in the *Rules and Regulations* of the Examination Board.

Table 1a: the first year for students already enrolled before September 1, 2013

|  | study load<br>in EC | teaching<br>activities <sup>3</sup> | assessment <sup>4</sup> | enablers |
|--|---------------------|-------------------------------------|-------------------------|----------|
| We Create Identity   | 5                   |                                     | Q1                      |          |
| Smart Environments   | 4                   |                                     | Q2                      | ST       |
| Living and Working Tomorrow                                  | 5                   |                                     | Q3                      |          |
| Have Fun and Play!   | 5                   |                                     | Q4                      |          |
| Visual Communication   | 4                   |                                     | Q1                      | NM       |
| Sketching for CreaTe   | 3                   |                                     | Q2                      |          |
| Interactive Visualization                                    | 4                   |                                     | Q3&Q4                   | NM       |
| Designing in Context   | 3                   |                                     | Q3                      |          |
| Human Factors  | 3                   |                                     | Q4                      |          |
| Introduction to Computer Science                             | 2                   |                                     | Q1                      |          |
| Programming and Physical Computing                           | 7                   |                                     | Q1&Q2                   | NM       |
| Introduction to Physical Systems and their Dynamic Behaviour | 5                   |                                     | Q3&Q4                   | ST       |
| Introduction to Mathematics and Modelling                    | 6                   |                                     | Q2&Q3                   | ST       |
| First year portfolio   | 4                   |                                     | Q1-Q4                   | P        |
| Year 1   | 60                  |                                     |                         |          |

The abbreviations for enablers must be read as follows

- NM (New Media) students must have completed these units before they can participate in the New Media course of the second year (cf. Art 1.12 of this appendix).
- ST (Smart Technology) students must have completed these units before they can participate in the Smart Technology course of the second year (cf Art 1.12 of this appendix).
- P students must have completed the first year portfolio before they can participate in the second year portfolio.

<sup>3</sup> The column is empty since these units of study are no longer taught, cf Art. 1.1.2a

<sup>4</sup> The column contains quarters where subtests have to be taken to fulfil the assessment requirements, since there will be no more examinations for these units. See the Transitional arrangements appendix.

Table 1b: the first year for students first enrolled on or after September 1, 2013

|   | study load in EC | teaching activities <sup>5</sup> | Assessment type <sup>6</sup> |
|---|------------------|----------------------------------|------------------------------|
| <b>We Create Identity</b>   |                  |                                  |                              |
| <i>Introductions to programming, computer science and engineering; web technology; video workshops; visual communication; storytelling/moviemaking project; Mathematics "sprint" week</i> | 15               | ADGILP                           | ADOPRW                       |
| <b>Smart Environments</b>   |                  |                                  |                              |
| <i>Introductions to mathematics, programming and physical computing; sketching; project management; implicit interaction and sensing; smart environments project</i>                      | 15               | ADGILP                           | ADOPRW                       |
| <b>Living and Working Tomorrow, Ideation and Explorative Design</b>   |                  |                                  |                              |
| <i>Mathematics continued; design methodology; animation tools; creative thinking techniques; product development project for a client</i>   | 15               | ADGILP                           | ADOPRW                       |
| <b>Art, Impact and Technology</b>   |                  |                                  |                              |
| <i>Statistics; programming; human factors, and project on art, impact and technology</i>  | 15               | ADGILP                           | ADOPRW                       |
| <b>Year 1</b>   | <b>60</b>        |                                  |                              |

There are no regulations restricting admission to units of study in this Table 1b.

<sup>5</sup> A (Assignments) Students work on assignments, under supervision of a teacher and/or assistant.  
D (Deliverable) a result is being produced, which can be demonstrated and observed; the product is more than mere text for reading.  
G (Group) students collaborate in a group.  
I (Interaction) questions are raised, discussed and answered, in collaboration between students and teacher.  
L (Lectures) an expert speaker addresses the students.  
P (Presentations) the students address their fellow students.

<sup>6</sup> A (Assignments) students hand in (homework) assignments.  
D (Deliverable) students demonstrate the results of an assignment (a working prototype, a result to be analysed and observed, not mere text)  
O (Oral) oral examination  
P (Public defence) student give a presentation and (publicly) defend the results of an assignment  
R (Report) students hand in one or more written texts (reports, essays, papers).  
W (Written) students participate in a session for a written exam.



Table 2a: the second year for students already enrolled before September 1, 2013

|  | study load in EC | teaching activities <sup>7</sup> | assessment <sup>8</sup> | prerequisites |
|--|------------------|----------------------------------|-------------------------|---------------|
| Ambient Screens                                      | 5                |                                  | Q2                      | 45            |
| Hybrid Worlds  | 5                |                                  | Q4                      | 45            |
| Creative Explorations in Art, Science and Technology | 2                |                                  | -- <sup>9</sup>         | 45            |
| Animated Narration                                   | 3                |                                  | Q1                      | 45            |
| Innovation and Entrepreneurship for IBA              | 3                |                                  | Q3                      | 45            |
| Startrix for CreaTe                                  | 5                |                                  | Q3                      | 45            |
| Programming with Structures                          | 5                |                                  | Q1 <sup>10</sup>        | 45            |
| Web Services and Data-driven Applications            | 4                |                                  | Q4                      | 45            |
| Introduction to Probability and Statistics           | 3                |                                  | Q4                      | 45            |
| Research Methodology                                 | 2                |                                  | Q2                      | 45            |
| Systems and Signals                                  | 3                |                                  | Q1                      | 45            |
| either Strategies and Protocols                      | 3                |                                  | Q3                      | 45+r          |
| or Queues and logistics                              | 3                |                                  |                         | 45+r          |
| <i>either Smart Technology</i>                       | 15               |                                  | Q1-4                    | 45+ST         |
| <i>or New Media</i>                                  | 15               |                                  | Q1-4                    | 45+NM         |
| Second Year Portfolio                                | 2                |                                  |                         | 45+P          |
| Year 2   | 60               |                                  |                         |               |

The two pairs of units preceded by “either...or” are options. Each student has to complete at least one of the units of each pair. (cf this Art 1.1.5)

The units which are printed in italics are specific for a specialization. (cf this Art 1.1.5). Students who opt for Smart Technology take the Smart Technology unit. Students who opt for New Media take the New Media unit. Both units have a study load of 15 credits.

<sup>7</sup> This column is empty since these units are no longer taught, cf. Art. 1.1.2b

<sup>8</sup> The column contains quarters where subtests have to be taken to fulfil the assessment requirements, since there will be no more examinations for these units. See the Transitional arrangements appendix.

<sup>9</sup> This unit is to be completed by individual appointment

<sup>10</sup> This unit is to be completed by individual appointment.

The prerequisites must be understood as follows (see also Art 1.12 of this appendix):

- 45 To participate, students must have completed units of the first year with a total study load of at least 45 EC
- +r To participate, students have to register, and their registration must be accepted; the courses have a limited capacity for participation
- +NM (New Media) To participate, students must have completed the NM enablers of table 1.
- +ST (Smart Technology) To participate, students must have completed the ST enablers of table 1a.
- +P To participate, students must have completed the first year portfolio.

Table 2b: the second year for students first enrolled on or after September 1, -2013

|  | study load in EC | teaching activities <sup>11</sup> | Assessment type <sup>12</sup> |
|--|------------------|-----------------------------------|-------------------------------|
| <i>either New Media (NM) or Smart Technology (ST)</i>  |                  |                                   |                               |
| <b>ST:</b><br><i>systems and signals; introduction to electronics, telecommunication, sensors and control systems; individual research project or</i>  | 15               | ADGILP                            | ADOPRW                        |
| <b>NM:</b><br><i>systems and signals, animated narration, sound engineering and game development; individual research project</i>  |                  |                                   |                               |
| Intelligent Interaction<br><i>Interaction design; artificial intelligence; research methodology; statistics; programming; interaction design project</i>   | 15               | ADGILP                            | ADOPRW                        |
| innovation & Entrepreneurship<br><i>Theory of innovation and entrepreneurship; property rights; project on business development/business planning; game theory; ethics and professional responsibilities</i> | 15               | ADGILP                            | ADOPRW                        |
| Data: from source to senses<br><i>Data driven applications; data visualization; virtual meets reality project; communication protocols, choice between extra smart technology or extra new media</i>         | 15               | ADGILP                            | ADOPRW                        |
| Year 2   | 60               |                                   |                               |

<sup>11</sup> A (Assignments) Students work on assignments, under supervision of a teacher and/or assistant.  
D (Deliverable) a result is being produced, which can be demonstrated and observed; the product is more than mere text for reading.  
G (Group) students collaborate in a group.  
I (Interaction) questions are raised, discussed and answered, in collaboration between students and teacher.  
L (Lectures) an expert speaker addresses the students.  
P (Presentations) the students address their fellow students.

<sup>12</sup> A (Assignments ) students hand in (homework) assignments.  
D (Deliverable) students demonstrate the results of an assignment (a working prototype, a result to be analysed and observed, not mere text)  
O (Oral) oral examination  
P (Public defence) student give a presentation and (publicly) defend the results of an assignment  
R (Report) students hand in one or more written texts (reports, essays, papers).  
W (Written) students participate in a session for a written exam.

The regulation regarding admission to units of study in this table 2b is in Art. 1.12.1 of this appendix. There is no specific prerequisite requirement regarding the choice between the New Media and the Smart Technology module.

Table 3a: the third year for students already enrolled before September 1, 2013

|   | study load in EC | prerequisites |
|---|------------------|---------------|
| <i>Free space to establish a profile (profileringsruimte)</i> | 30               | 90            |
| <i>Electives, choice from</i>                                 | 15               | 90            |
| <i>Cyber Crime Science, 6EC</i>                               |                  |               |
| <i>Remote Care Nearby, 5EC</i>                                |                  |               |
| <i>Entertainment Education, 5EC</i>                           |                  |               |
| <i>Communication Technology for Global Work, 5EC</i>          |                  |               |
| <i>Ethics for CreaTe, 5EC</i>                                 |                  |               |
| Final Project   |                  | 150           |
| Year 3  |                  |               |

The units of table 3a which are printed in italics describe electives and options for the student. See Art 1.1.6 and 1.1.8.

Provisions for the choice of options and electives are further elaborated in Art. 1.12.3.

Students may replace Ethics for Creative Technology by other Ethics courses, if their tutor approves. Students may propose to take other courses as elective than the courses in the list; however, they need explicit permission of the Examination Board to take an elective (non-ethics) course which is not in the list.

The prerequisites must be understood as follows (see also Art 1.12 of this appendix)

- 90 To participate in these units of study, students must have completed units of their first and second year totalling at least 90 credits.
- 150 To start the Final Project, students must have completed 150 EC of the entire programme.

Most of the elective courses are no longer available as separate individual courses.

The transitional arrangements appendix explains how to fulfill assessment requirements

Table 3b: the third year for students enrolled on or after September 1, 2013

|   | study load in EC | teaching activities | Assessment type |
|---|------------------|---------------------|-----------------|
| First module of minor programme/ courses in the exchange programme                            | 15               |                     |                 |
| Second module of minor programme/ courses in the exchange programme                           | 15               |                     |                 |
| Pre Final module  |                  |                     |                 |
| <i>graduation project part 1</i><br><i>academic writing</i><br><i>real life confrontation</i> | 15               |                     |                 |
| Final module  |                  |                     |                 |
| <i>graduation project part 2</i><br><i>reflection</i>   | 15               |                     |                 |
| Year 2  | 60               |                     |                 |

More information on modules for the minor programme is available at the university's [Major-minor website](#)<sup>13</sup>

The range of modules available at the University of Twente for the minor programme covers

HTHT modules; modules for the Crossing Borders, the Education and the Board minor; join-in modules; in-depth modules; premaster (or transfer) modules

But the minor programme can also consist of courses at another (foreign) university, and it can contain practical work (as a trainee or intern in a company) of Art 1.12 of this appendix.

The Pre-Final module must precede the Final module; the powers of the Examination Board to deviate from these Regulations in individual cases under circumstances of an overriding nature do not extend to this constraint on the order of units.

The Pre Final module and the Final module must be taken in the same semester.

<sup>13</sup> <http://www.utwente.nl/en/education/electives/minor/>

## Art 1.2 - CONTENTS OF EXAMINATION SPECIALIZATIONS (B)

There are no specializations a student can choose for graduation.

## Art 1.3 - INTENDED LEARNING OUTCOMES (C)

Graduates of this program are problem-solvers, who

- can trace back (or help a client trace back) a possibly ill-posed initial question to the underlying challenge,
- can generate ideas and concepts,
- can identify opportunities for the exploitation of new technologies, and
- can develop ideas and concepts into key prototypes.

To this end, they acquire skills and knowledge in five areas:

- (1) Controlling the process of creation by a designer;
- (2) Understanding and use of technology;
- (3) Designing for interaction, expression, impact and experience;
- (4) Societal and economic value; and
- (5) Academic and professional skills.

The intended learning outcomes in area (1) Self-managing a process of creation, are:

1. Graduates understand autonomous design, and have the skills and knowledge to act as an autonomous designer, so
  - a. they can identify and choose projects,
  - b. they can explain and justify ideas in context,
  - c. they have developed personality and a personal style
2. Graduates understand and are skilled in creative thinking and creative acting, so
  - a. they know and can apply creative thinking techniques,
  - b. they know and can apply divergent and convergent thinking,
  - c. they know and can apply tinkering.
3. Graduates understand and have the knowledge to employ multidisciplinary design methods, so
  - a. they understand and can apply phasing in the systematic design process
  - b. they understand and can apply demand driven and explorative design,
  - c. they can design in a team, and invoke help of experts
  - d. they have the knowledge and skills to document and report,
  - e. they have the knowledge and skills to incorporate the user in the design process,
  - f. they have the knowledge and skills to evaluate design options and take design decisions

The intended learning outcomes in the area (2) Understanding and use of technology are:

4. Graduates understand and can use technology in the following domains:
  - a. software, algorithms, physical interaction
  - b. web technology, web services and data management,
  - c. behaviour of physical systems, (especially in the electrical domain)
  - d. sensing, implicit interaction
  - e. telecommunication.
5. Graduates can rely on a basic knowledge of physics, mathematics and engineering in support of their understanding and use of technology.

The intended learning outcomes in the area (3) Designing for interaction, expression, impact and experience are:

6. The graduates understand and can use expressive technology, so
  - a. they have knowledge and skills in expressive media, like stills and moving images, sound and 3d-modelling,
  - b. they have knowledge and skills in storytelling, story worlds, and messaging.
7. The graduates
  - a. have knowledge of and can investigate human technology relationship and human design relationship
  - b. are familiar with arts and culture
  - c. are aware of human factors, and of social patterns and societal structures;

The intended learning outcomes in the area (4) Societal and economic value are:

8. The graduates have knowledge and skills to bring creative technology to the market, so
  - a. they have the knowledge to perform a market analysis
  - b. they are familiar with attracting capital and financing,
  - c. they understand intellectual property rights
  - e. they can write a business plan.
9. Graduates are aware of the roles of designers in society, and the standards (ethically and legally) for professional behavior.

The intended learning outcomes in the area (5) Academic and professional skills are:

10. Graduates can communicate with experts and non-experts about all aspects of their field, this communication covers
  - a. presentation,
  - b. justification
  - c. documentation,
  - d. scientific debate (to a limited extent) ;



in this communication the graduate knows how to employ modern media.

## 11. Graduates are

- a. capable of logical reasoning;
- b. inquisitive and capable of posing proper questions;
- c. they have knowledge of research methods,
- d. they can set up their own research (to a limited extent) ;
- e. they can critically evaluate results obtained (by themselves and others);
- f. they can work in a team
- g. they are capable of critical reflection and can adapt their behavior on the basis of that reflection
- h. they are aware of gaps in their own knowledge and skills;
- i. they are prepared to learn and capable of learning.

## Art 1.4 - PRACTICAL WORK AND PRACTICAL EXERCISES (D)

There are no special provisions for practical work and exercises.

## Art 1.5 - STUDY LOAD OF THE PROGRAMME AND ITS UNITS (E)

The study load of units of study is in the tables of article 1.1 of this appendix. The study load of the entire programme is 180 EC..

## Art 1.6 - ADDITIONAL REQUIREMENTS REGARDING BSA (NOTICE OF EXCLUSION) (F)

The programme imposes no additional requirements regarding BSA (the “bindend studieadvies”).

## Art 1.7 - STUDY LOAD MASTER’S PROGRAMME (G)

Does not apply.

## Art 1.8 - PROVISIONS REGARDING THE NUMBER OF OPPORTUNITIES TO TAKE TESTS AND INTERIM EXAMINATIONS, AND THEIR ORDER (H)

1. There are two opportunities per academic year to sit a written interim examination for units of study in tables 1a, 2a and 3a of Art. 1.
2. For the final assessment of a unit of study in table 1b or 2b, the regulations of Art. 1.11.3 and 1.11.4 of this appendix apply.
3. The provisions regarding the order of tests and exams are contained in the admission conditions of Art 1.12 of this appendix. The same provisions appear in the tables of Art 1.1 of this appendix.

## Art 1.9 - THE FULL- /PART-TIME STATUS (I)

The programme enrolls only students with a full-time status.

## Art 1.10 - TEST AND EXAMINATION PERIODS (J)

1. Periods for tests and exams are in the rosters.
2. There is no specific period to take the bachelor's examination.

## Art 1.11 - TYPE AND ORGANIZATION OF TESTS AND ASSESSMENT (L)

1. The way test and assessment are organized can be found in the tables 1a, 1b, 2a, 2b, and 3a of Art 1.1 of this appendix. The following abbreviations are used::

A (Assignments ) students hand in (homework) assignments.

D (Deliverable) students demonstrate the results of an assignment (a working prototype, a result to be analysed and observed, not mere text)

E (Essay) students hand in one or more essays.

O (Oral) oral examination

P (Public defence) student give a presentation and (publicly) defend the results of an assignment

W (Written) students participate in a session for a written exam.

These codes for assessment characterize exams. The examiner will observe these characteristics, but may add more detailed requirements for assessment.

2. For units in tables 1b and 2b (Article 1.1 of this appendix) the examiners will set and publish (available at the start of the unit)
  - a. an overview of the various tests involved, and the nature of each individual test in terms of Article 1.11.1
  - b. a required minimum score for each test, in order to achieve a result for the entire module.
  - c. the weight that each test will have in determining the final grade for the entire module.
3. Authority of the Examiner and the Examination Board regarding supplementary assessment (applicable only to units of Article 1.1 tables 1b and 2b, and to the Pre Final and Final module of table 3b)

The examiner of each unit can offer participants a *supplementary assessment* for the unit.

Admission to supplementary assessment can be granted only to students who failed the unit, but who were close to success, and who have shown, despite their failure for this module, clear progress towards reaching the final qualifications of the programme.

The Examination Board gives directions to the examiner regarding the admission of students to supplementary assessment.

4. Supplementary assessment (applicable only to units of Article 1 tables 1b,2b, and to the Pre Final and Final module of table 3b)

Supplementary assessment for a unit is conducted within a 10 weeks period after the moment the result of the unit is set. This does not entail that candidates are entitled to have a 10 weeks period between the original result and the supplementary assessment.

For candidates who are admitted to the supplementary assessment, the result of the unit is suspended, until the result of the supplementary assessment is available (i.e. the suspension lasts at most 10 weeks)

If the result of the supplementary assessment is positive, the candidate is awarded by a grade 6 for the entire unit. Only in the grading of the Final module the examiner may decide to give a mark higher than 6 after supplementary assessment.

If the result of supplementary assessment is negative, the result of the unit is the original result, that has been suspended until the supplementary assessment.

## Art 1.12 - CONDITIONS OF ADMISSION TO UNITS OF STUDY (S)

1. (Applies only to students who were already enrolled before September 1, 2013.)  
To participate in the units of study of the second year of table 2a the following conditions must be met:
  - a. There is a registration as either New Media or Smart Technology student
  - b. Study units of the first year with a total study load of at least 45 credits have been completed.
  - c(Math) To take either Queues and Logistics or Strategies and Protocols, the student's registration for the course of his/her choice must have been accepted. There is a registration procedure for students to apply for participation, the number of participants for each course is limited.
  - d(ST). To take Smart Technology as a specialization in the second year, the enabling units of the first year must have been completed. The enabling units for ST are (see also table 1a)  
Smart Environments  
Introduction to Physical Systems and their Dynamic Behaviour  
Introduction to Mathematics and Modelling
  - d(NM). To take New Media units as a specialization in the second year, the enabling units of the first year must have been completed. The enabling units for NM are (see also table 1a)  
Visual Communication  
Interactive Visualization  
Programming and Physical Computing
2. (Applies only to students who were already enrolled before September 1, 2013.)  
To participate in units of the third year, the following conditions must be met
  - a. Study units of the first and second years must have been completed with a total study load of at least 90 credits.
  - b. (*profileringsruimte*) The second year tutor has given permission (on behalf of the Examination Board) for the courses in the *profileringsruimte*; the tutor has the authority to refuse permission even if a proposed choice of courses meets the requirements b1, b2 and b3.

- b1. (*profileringsruimte*) The units of study in the *profileringsruimte* are courses offered by an institution or programme which has an accreditation proving its university level, or comparable. **The Examination Board may rule otherwise in individual cases.**
- b2. (*profileringsruimte*) The units of study of an introductory nature among the courses in the *profileringsruimte* have a total study load of at most 20 EC; the amount of practical work in the *profileringsruimte* does not exceed a study load of 15 EC.
- b3. (*profileringsruimte*) The units of study devoted to foreign culture and language among the courses in the *profileringsruimte* have a total study load of at most 10 EC
- c (*electives*) The second year tutor has given permission (on behalf of the Examination Board) for the choice of electives; the tutor has the authority to refuse permission even if a proposed choice of courses meets the requirements c1, c2, c3 and c4.
- c1 (*electives*) At least one unit among the electives deals with ethics and professional standards.
- c2 (*electives*) other units among the electives deal with research into human-product relationships, from the perspective of behavioural and/or management sciences, except for students who opt for an effort as described under c3 or c4.
- c3 (*electives*) one unit among the electives, with a study load of 5 EC maximum, can be an assistantship in a final project of a fellow student. It must be clear that the student doing the final project defines the work of the assistant, and acts as his or her manager. An examiner appointed by Examination Board is responsible for the assessment of the assistant's work.  
This option cannot be combined with the option under c4. The Examination Board sets rules for assistantships.
- c4 (*electives*) one unit among the electives, with a study load of 5 EC maximum, can be devoted to academic writing. (*201300223 Academic Writing for CreaTe*) This option cannot be combined with the option under c3.
- c5 (*electives*) one unit among the electives can be devoted to study tour preparation. (*201300292 Study Trip Theme Course*) This option is available only for participants in a study tour, and cannot be combined with option under c3.
3. **(Applies only to students who were already enrolled before September 1, 2013.)**  
To start their Final Project, students must have completed units totalling 150EC of the programme.
4. **(Applies only to students who were first enrolled on or after September 1, 2013.)**  
To participate in the units of study of the second year of table 2b the following conditions must be met:
- a. Study units of the first year with a total study load of at least 45 credits have been completed.
  - b. A student must have completed the corresponding module of Table 1b in Art. 1.1 of this appendix. (Corresponding means: taught in the same

quarter). The module examiner of the Table 2b module may grant exemption of this rule.

5. (Applies only to students who were first enrolled on or after September 1, 2013.)  
To start a minor programme, the following conditions must be met
  - a. Study units of the first and second years must have been completed with a total study load of at least 90 credits (i.e. 6 modules).
  - b. (Minor programme) The second year tutor has signed for agreement (on behalf of the Examination Board) with the contents of the *minor programme*; the tutor has the authority not to agree even if a proposed choice of courses meets the requirements b1, b2 and b3.
    - b1. (Minor programme partly outside the UT) The units of study in the *minor programme* are courses offered by an institution or programme which has an accreditation proving its university level<sup>14</sup>, or comparable. The Examination Board may rule otherwise in individual cases.
    - b2. (Minor programme partly outside the UT) The units of study of an introductory nature among the courses in the *minor programme* have a total study load of at most 20 EC; the amount of practical work in the *minor programme* does not exceed a study load of 15 EC.
    - b3. (Minor programme partly outside UT) The units of study devoted to foreign culture and language among the courses in the *minor programme* have a total study load of at most 10 EC.
6. (Applies only to students who were first enrolled on or after September 1, 2013.)
  - a. To start their Final module, students must have completed their Pre Final module in the previous block
  - b. To start their Pre Final module, students must have completed all units (modules) of tables 1b and 2b.

## Art 1.13 - MANDATORY PARTICIPATION IN PRACTICAL WORK AND/OR PRACTICAL EXERCISES TO BE ADMITTED TO THE EXAMINATION (T)

1. The tables in Art 1.1 of this appendix show for which units of study participation in practical work is mandatory in order to be admissible to the exam (if any).
2. Provisions (if any) regarding mandatory practical work are also to be found in Art 1.12 of this appendix.

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<sup>14</sup> Although institutes for higher professional education are recognized as universities outside the Netherlands, they are \*not\* included in this Dutch use of "university level". For a minor programme at such an institute a student needs permission of the Examination Board.

## PARAGRAPH 2 OTHER PROGRAMME SPECIFIC CHARACTERISTICS

### Art 1.14 - LANGUAGE

1. The language of the programme is English. This applies to teaching and examination.
2. The Examination Board can grant permission to teach and conduct interim examination in another language. Permission can be granted only if it serves the quality of the assessment.
3. The dean issues a regulation concerning the assessment of English language proficiency of staff members who teach courses in the programme, and of the support staff for the programme. All staff involved must meet the language requirements of the regulation. Courses to improve English proficiency of staff members are provided.

### Art 1.15 - STUDENT COUNSELLING

1. By Art. 6.2.2 of the teaching and examination regulations, each student has a study adviser, who, in accordance with the university directive for study advice and notices of exclusion, is the primary person to address for students in matters concerning their study.
3. The study adviser for Creative Technology has a task in mentoring, i.e. personal guidance oriented to personal problems and personal growth.

### Art 1.16 - TUTORING

1. Every student of Creative Technology has a tutor. Tutors are university staff members who take care of academic guidance and professional growth of their tutees (a tutee is a student who is guided by the tutor).
2. The Examination Board delegates advice and approval for choices of courses in the *profleringsruimte*, **the minor programme**, and choices of electives to the tutors.

### Art 1.17 - REGULATIONS REGARDING REGISTERING FOR TESTS AND EXAMS

Regulations regarding the registration as a participant before taking a test or exam can be found at the Creative Technology web site.

### Art 1.18 - THE DESIGNATED MASTER'S PROGRAMME

1. The master's programme for Creative Technology graduates, in accordance with section 7.13, subsection 3 of the Act, is the Human Media Interaction Programme of the University of Twente.
2. Admission to other Master's programmes may depend on study units in the student's "profleringsruimte" or **minor programme**. The Admissions Board of the Master's programme defines the requirements an applicant must meet to be eligible for admission.

## Art 1.19 - THE ADMINISTRATION OF THE RESULTS FOR TESTS AND EXAMS

1. When an exemption is granted for a test, this is registered in the student information system as a result for that test, with code VR (Dutch: Vrijstelling). This VR result will count as a mark 7 with weight 0 when a (weighted) average of test results is determined.
2. A student who is entitled to an exemption for a test, may decide to take the test anyway, in order to get a proper mark, instead of the VR and its associated 6.
3. A test may be marked by Pass or Fail only, instead of a score on the standard numeric scale. A Fail is registered by code NVD (Dutch: niet voldaan), a Pass is registered by code V (Dutch: voldaan). No numeric values are associated with these codes for the purpose of determining averages.
4. If more than one mark is registered (for different attempts at the same test or exam), the highest mark counts.

## Art 1.20 - REGULATIONS REGARDING BSA (NOTICE OF EXCLUSION)

1. Creative Technology uses the BSA module of the student information system.
2. Recommendations regarding the continuation of studies are based on results that are registered for units of study (i.e. not on the results of (sub)tests).
3. The Creative Technology programme imposes no additional requirements for a positive recommendation except the requirement that 45EC must have been completed, in accordance with Art. 6.3.7. of the Teaching and Examination Regulations
4. Students will receive their formal recommendations digitally (i.e. not on paper, and with a digital signature). The recommendations are formulated in accordance with the provisions of these regulations.

## Art 1.21 - REGULATIONS REGARDING CONFIDENTIALITY AND NON-DISCLOSURE

1. The Final Project thesis is a public document, the Final Project presentation is a public defense.
2. The Programme Board may decide to suspend publication of a Final project thesis for a limited period of time., and to declare the information in the thesis to have a confidential status
  - a. Confidentiality can be granted only if the thesis supervisor asks for confidentiality at the start of the Final project
  - b. Even under an agreement of confidentiality, the thesis is accessible for parties who have duties and responsibilities regarding the quality of education: the Programme Director, the Board of Examinors, and, when applicable, the Quality Assessment Committee for accreditation.
  - c. Parties with access to a confidential thesis will respect confidentiality, and sign a non-disclosure agreement if so required.
3. There is no exception to the rule that the thesis defense is public.

4. The nature of the final presentation may be adapted to prevent confidential information becoming public.



# **DRAFT TRANSITIONAL ARRANGEMENTS APPENDIX TO THE TEACHING AND EXAMINATION REGULATIONS OF THE BACHELOR'S PROGRAMME CREATIVE TECHNOLOGY**

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The regulations in this appendix form an integral part of the teaching and examination regulations of the bachelor's programme Creative Technology of the Faculty of Electrical Engineering, Mathematics and Computer Science of the University of Twente.

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### Art 1.1 - TRANSITIONAL ARRANGEMENTS

#### 1. Regulation 2012-2013 regarding the first year's exam (propedeuse)

**Occasion:** This regulation is necessary because the first year's programme changes, starting September 2012.

The earlier regulation regarding study units of the first year of 2011-2012 is incorporated in this regulation.

**Term of validity:** expired; still recorded for the purpose of reference.

**Contents of the regulation:**

To complete their first year, students who were first enrolled in 2010-2011 or 2011-2012 must comply to provisions 1 – 4. Where these provisions speak of “lines” and “columns”, they refer to lines and columns in *Table 1 - first year courses in the academic years 2010-2011, 2011-2012, 2012-2013*.

1 (Applies to all students who were first enrolled in either 2010-2011, or 2011-2012)  
To meet the requirements of the first year, a unit of study (or a combination of units, when applicable) must be completed at each of the lines 1 through 13 of table 1. The unit which is completed can be a unit from a column corresponding to a later academic year than the year of the student's first enrolment. It can never be a unit from a column corresponding to an academic year preceding the year of first enrolment.

2a. (Applies only to students who were first enrolled in 2010-2011)  
To meet the requirements of the first year, units from lines 14 – 16 must be completed, with a study load which is enough to reach a total first year study load of (at least) 60 EC.

2b. (Applies only to students who were first enrolled in 2011-2012)  
To meet the requirements of the first year, the First Year Portfolio course (line 14) must be completed.

3. (Applies to all students who were first enrolled in either 2010-2011, or 2011-2012) Tests passed for Introduction to Computer Science (line 1), Interactive Visualization (line 10), and/or Introduction to Dynamical Systems and their Dynamic Behaviour (line 13) during the academic year 2012-2013 in order to comply to provision 1, may be regarded as resits for tests for the corresponding courses of the academic year 2011-2012, and the results can hence be registered for those courses, with the study load of 2011-2012.

4. (Applies to all students who were first enrolled in either 2010-2011, or 2011-2012) If the student's first year course programme complies to provisions 1 and 2 (either 2a or 2b), but totals less than 60 EC in study load, the student's tutor will issue a supplementary assignment to meet the requirement that the first year programme must have a 60 EC study load.

## 2. Regulation 2012-2013 regarding the second year programme and the Bachelor's exam

**Occasion:** This regulation is necessary because the second year programme changes, starting September 1, 2012.

**Term of validity:** until September 1, 2016.

### **Contents of the regulation:**

To meet the second year requirements towards their bachelor's exam, students who were first enrolled in 2010-2011 or 2011-2012 must comply to provisions 1 – 3, called the initial requirements, and the additional requirements laid down in provisions 4a, 4b, 5 and 6. Where these provisions speak of "lines" and "columns", they refer to lines and columns in *Table 2 - second year courses in the academic years 2011-2012 and 2012-2013*.

1 (Applies to all students who were first enrolled in either 2010-2011, or 2011-2012) To meet the requirements of the second year, a unit of study must be completed at each of the lines 1 through 7 of table 2.

The unit which is completed can be a unit from a column corresponding to a later academic year than the year of the student's first enrolment. It can never be a unit from a column corresponding to an academic year preceding the year of first enrolment.

2 (Applies to all students who were first enrolled in either 2010-2011, or 2011-2012) To meet the requirements of the second year, the student must complete units with a study load totalling 15 EC for his/her specialization, either New Media or Smart Technology.

For Smart Technology it is necessary to complete units online 8 (of table 2). When applicable, the result of a subtest of the 15 EC Smart Technology course in the 2012-2013 column may be registered in the student information system as a result for the (applicable) "old" course of the 2011-2012 column.

New Media is completed by combining results for units on lines 9, and 17 – 20. A result for a subtest of the 15 EC New Media course in the 2012-2013 column cannot be registered as a result for an "old" course in the 2011-2012 column. But conversely, results for courses in the 2011-2012 column may be recognized by the New Media examiner as grounds for exemption from subtests in the 15 EC New Media course.

It is possible for the New Media examiner to register results for separate courses corresponding to parts of the 15 EC New Media course. These separate courses are

Sound Engineering, Graphics, Game Development, and Serious Gaming. They are distinct from each of the “old” courses in the 2011-2012 column, but a student may use them to combine with results for courses in the 2011-2012 column to accumulate the required 15 EC study load in New Media results. Note however that a result for Game Development as part of the 15 EC New Media course cannot be combined with a result for Game Development in the 2011-2012 column. A combination of 3D Modelling (2011-2012) and Graphics (part of 2012-2013 New Media) is equally impossible.

3. (Applies to all students who were first enrolled in either 2010-2011, or 2011-2012)  
To meet the requirements of the second year, one of the units of study at the lines 10 and 11 of table 2 must be completed.

4a (Applies to students who were first enrolled for 2011-2012)  
To meet the requirements of the second year, the units at lines 12 – 16 in the 2012-2013 column of table 2 must be completed.

4b (Applies to students who were first enrolled for 2010-2012)  
To comply with provisions 1 – 3 units with a total study load of 45,5 EC (minimum) and 52 EC (maximum) must be completed. To meet the requirements of year 2, the units completed in order to comply with provisions 1 – 3 must be supplemented by additional units.

Firstly, it is mandatory to complete units from the following list. They will count as a supplement to the units that are used to comply with 1 – 3, unless they have already been used to meet other requirements.

1. Systems and Signals (line 14) must be completed, but it counts as a supplement only if it has not been used to meet first year’s requirements;
2. Introduction to Statistics and Probability (line 15) must be completed, but it counts as a supplement only if it has not been used to meet first year’s requirements;
3. One of the two units at line 12, Web Services and Data-driven Applications in the 2012-2013 column and Data-driven applications in the 2011-2012 column, must be completed, and will count as a supplement. If both are completed, only one can count. However, the obligation to complete one of the line 12 courses ceases if Web 2.0 Mashups is completed, and not used to meet the New Media requirements of provision 2. Then Web 2.0 Mashups counts as a supplement for his provision 4b, instead of one of the line 12 courses.

Secondly, the student may use other units that have been completed as a supplement. Completion is not mandatory, but the study load of the units in support of the initial requirements (provisions 1 – 3) together with the supplementary units, must add up to a total study load of at least 58 EC. The optional units are

4. The units at lines 10,11,17 and 18, but (obviously) **not** the ones that have been used to meet initial requirements, or as substitute for a mandatory supplement in 4b under 3
5. Research Methodology.
6. Second Year Portfolio, but only if Research Methodology is also used as a supplementary unit.

5 (Applies to students who were first enrolled for 2010-2012)

If the student’s first year course programme complies to provisions 1 – 3 and 4b, but totals less than 58 EC in study load, the student’s tutor will issue a supplementary assignment.

6 (Applies to students who were first enrolled for 2010-2012)

If the student's second year course programme complies to all provisions but totals to a study load which is not exactly 60 EC (at least 58 is mandatory), the difference (both shortage and excess) will be compensated in the "profileringsruimte".

### 3. Regulation 2013-2014 regarding the first year's exam (propedeuse)

**Occasion:** This regulation is necessary because the first year's programme changes, starting September 2013.

More specifically, none of the units of study of Table 1a in Art 1.1 of the programme appendix of the teaching and examination regulations will be offered (nor examined) in (nor after) 2013-2014.

**Term of validity:** until September 1, 2016.

**Contents of the regulation:**

Students who started their studies before September 1, 2013 can take their first year's exam if they meet the following requirement:

For every unit of study of Table 1a in Art 1.1 of the programme appendix of the teaching and examination regulations they have completed a substitute (if not the unit itself), i.e.

1. They have completed units of study of Table 1a; and
2. For units that were not completed they have completed applicable substitute units, in accordance with Regulation 1 of these *Transitional arrangements*, or
3. For units that were not completed they have successfully passed (sub)tests in one of the four modules of the 2013-2014 programme,

The modules (15 EC units of study of the 2013-2014 programme) consist of parts which correspond to second year courses of 2012-2013.

Table 1a in Art 1.1 of the programme appendix of the teaching and examination regulations indicates in which of the 4 modules these corresponding elements can be found.

The substitute (sub)tests will be in the corresponding quarters.

### 4. Regulation 2013-2014 regarding the first year's exam (propedeuse)

**Occasion:** This regulation is necessary because the first year's examination is no longer an official examination of the bachelor's programme, starting September 1, 2013.

**Term of validity:** expired; still recorded for the purpose of reference.

**Contents of the regulation:**

Students enrolled at the University of Twente in the academic year 2012-13 for the first (propedeuse) year of the Bachelor's programme, can take the propedeuse examination, and, if they pass that examination, will receive the propedeuse diploma. The opportunity to take the examination ceases to exist per September 1, 2014.

## 5. Regulation 2014-2015 regarding the units of study of the second year

**Occasion:** This regulation is necessary because the second year's programme changes, starting September 2014.

More specifically, none of the units of study of Table 2a in Art 1.1 of the programme appendix of the teaching and examination regulations will be offered in (nor after) 2014-2015.

**Term of validity:** until September 1, 2017.

### **Contents of the regulation:**

Students who started their studies before September 1, 2013 can take their Bachelor's exam if they meet the following requirement regarding the courses of the second year (and obviously also all requirements regarding their first and third year):

For every unit of study of Table 2a in Art 1.1 of the programme appendix of the teaching and examination regulations they have completed a substitute (if not the unit itself), i.e.

1. They have completed units of study of Table 2a; and
2. For units that were not completed they have completed substitute units, in accordance with Regulation 2 of these *Transitional arrangements*, or
3. For units that were not completed they have successfully passed (sub)tests in one of the four modules of the 2014-2015 programme,

The modules (15 EC units of study of the 2013-2014 programme) consist of parts which correspond to first year courses of 2012-2013.

Table 2a in Art 1.1 of the programme appendix of the teaching and examination regulations indicates in which of the 4 modules these corresponding elements can be found.

The substitute (sub)tests will be in the corresponding quarters.

## 6. Regulation 2015-2016 regarding elective units of the third year

**Occasion:** This regulation is necessary because the third year's programme changes, starting September 2015.

More specifically, some of the elective units of study of Table 3a in Art 1.1 of the programme appendix of the teaching and examination regulations will no longer be offered in (nor after) 2015-2016.

**Term of validity:** until September 1, 2018.

### **Contents of the regulation:**

Students who started their studies before September 1, 2013 can take their Bachelor's exam if they meet the following requirement regarding the courses of the third year (and obviously also all requirements regarding their first and second year):

They have completed elective courses with a study load totalling (at least) 15EC in accordance with the provisions of Table 3a, i.e.

They have completed units of study of Table 3a, and/or alternative units in consultation with their tutor and/or the Examination Board, and/or parts of second or third year modules as a replacement of one or more units of Table 3a.

- The "Ethics and professional responsibilities" track of the second year module Innovation and Entrepreneurship (cf Art 1.1 Table 2b) counts as a replacement for the elective course Ethics for CreaTe
- The "Real world confrontation" track in the pre-Final module (cf Art 1.1. Table 3b) can count as a replacement for either Entertainment Education or Remote Care Nearby
- The Academic Writing track in the Pre-Final module (cf Art. 1.1 Table 3b) counts as an elective substitute (cf Art. 1.12.2.c3)



TABLE 1 - FIRST YEAR COURSES IN THE ACADEMIC YEARS 2010-2011, 2011-2012 AND 2012-2013

| 2010-2011 |  | 2011-2012 |   |   | 2012-2013 |  |   |    |
|-----------|--|-----------|---|---|-----------|--|---|----|
|           | EC   |           | EC  |   | EC        |  |   |    |
| 1         | Introduction to Computer Science                           | 3         | Introduction to Computer Science  | 3 |           | Introduction to Computer Science                             | 2 | -1 |
| 2         | Web technology<br>We Create Identity                       | 3<br>3    | We Create Identity  | 5 | -1        | We Create Identity   | 5 |    |
| 3         | Smart Environments   | 3         | Smart Environments  | 3 |           | Smart Environments   | 4 | +1 |
| 4         | Living and Working Tomorrow                                | 6         | Living and Working Tomorrow   | 5 | -1        | Living and Working Tomorrow                                  | 5 |    |
| 5         | Have Fun and Play!   | 6         | Have Fun and Play!  | 5 | -1        | Have Fun and Play!   | 5 |    |
| 6         | Sketching for CreaTe                                       | 2         | Sketching for CreaTe  | 2 |           | Sketching for CreaTe   | 3 | +1 |
| 7         | Graphic Design   | 2         | Visual Communication  | 4 | +2        | Visual Communication   | 4 |    |
| 8         | Designing in Context                                       | 2         | Designing in Context  | 2 |           | Designing in Context   | 3 | +1 |
| 9         | Human Factors  | 3         | Human Factors   | 3 |           | Human Factors  | 3 |    |
| 10        | Interactive Visualization                                  | 5         | Interactive Visualization   | 5 |           | Interactive Visualization                                    | 4 | -1 |
| 11        | Programming for CreaTe                                     | 5         | Programming and Physical Computing  | 7 | +2        | Programming and Physical Computing                           | 7 |    |
| 12        | Creative Exploration of Structures<br>Motion and Modelling | 2<br>3    | Introduction to Mathematics and Modelling                                     | 6 | +1        | Introduction to Mathematics and Modelling                    | 6 |    |
| 13        | Dynamical systems  | 6         | Dynamical systems   | 6 |           | Introduction to Physical Systems and their Dynamic Behaviour | 5 | -1 |
| 14        |  |           | First Year Portfolio<br><i>This is a new unit compared to 2010-2011</i>       | 4 | +4        | First Year Portfolio   | 4 |    |
| 15        | Systems and Signals  | 3         | <i>Systems and Signals is now a second year course</i>                        |   | -3        |  |   |    |
| 16        | Introduction to Statistics and Probability                 | 3         | <i>Introduction to Statistics and Probability is now a second year course</i> |   | -3        |  |   |    |
|           |  |           |   |   | 9         |  |   | 3  |

13 lines in the table show units (in 2010-2011 combinations of 2 units) which persisted throughout the three academic years.

Line 14 shows a unit which has been introduced in 2011-2012.

Lines 15 and 16 show units which were first year units in 2010-2011, but which since moved to the second year programme.

Almost all of the persisting units changed over the three academic years, with a change in study load as indicated. (In 2011-2012 a load of 9 EC has been reallocated, in 2012-2013 the reallocation totalled 3 EC)

TABLE 2 - SECOND YEAR COURSES IN THE ACADEMIC YEARS 2011-2012 AND 2012-2013

| 2011-2012 (for students first enrolled in 2010) |  | EC  | 2012-2013 (for students first enrolled in 2011)  |    | EC   |
|---|--|-----|--|----|------|
| 1   | Ambient Screens  | 6,5 | Ambient Screens  | 5  | -1,5 |
| 2   | Hybrid Worlds  | 7,5 | Hybrid Worlds  | 5  | -2,5 |
| 3   | Creative Explorations in Art, Science and Technology                                 | 2   | Creative Explorations in Art, Science and Technology   | 2  |      |
| 4   | Advanced Graphic Design  | 2,5 | Animated Narration   | 3  | +0,5 |
| 5   | Marketing for IBA  | 5   | Innovation and Entrepreneurship for IBA  | 3  | -2   |
| 6   | Project Startrix   | 5   | Startrix for CreaTe  | 5  |      |
| 7   | Programming with structures  | 5   | Programming with Structures  | 5  |      |
| 8   | Introduction to electronics  | 4   | Smart Technology   | 15 |      |
|   | Wireless communication systems   | 4   |  |    |      |
|   | Control systems  | 4   |  |    |      |
|   | Sensors  | 3   |  |    |      |
| 9   | <i>New Media courses of 2011-2012 are in lines 18-20</i>                             |     | <i>New Media (contents changed compared to 2011-2012)</i>  | 15 |      |
| 10  | Strategies and Protocols   | 3   | Strategies and Protocols   | 3  |      |
| 11  | Queues and logistics   | 3   | Queues and logistics   | 3  |      |
| 12  | Data-driven Applications   | 3   | Web Services and Data-driven Applications<br><i>(Data-driven applications combined with Web 2.0 Mashups)</i> | 4  | +1   |
| 13  | <i>Systems and Signals was a first year course for students of 2010</i>              |     | Systems and Signals  | 3  |      |
| 14  | <i>Intro Statistics and Probability was a first year course for students of 2010</i> |     | Introduction to Statistics and Probability   | 3  |      |
| 15  |  |     | Research Methodology <i>(new course compared to 2011-2012)</i>   | 2  |      |
| 16  |  |     | Second year portfolio <i>( new course compared to 2011-2012)</i>   | 2  |      |
| 17  | 3-D Modelling  | 2,5 | <i>3-D modelling is now part of New Media</i>  |    |      |
| 18  | Web 2.0 Mashups  | 3   | <i>Web 2.0 Mashups is now part of Web Services and ... (cf line 12)</i>                                      |    |      |
| 19  | Game Development   | 6   | <i>Game Development is now partly incorporated into New Media</i>  |    |      |
| 20  | Virtual Environments   | 6   | <i>Virtual Environments ceased to exist</i>  |    |      |

In 2011-2012 the four courses combined in line 8 were Smart Technology specialization courses; in 2012-2013 there was a single 15 EC specialization course Smart Technology, with the same contents.

In 2011-2012 the courses in lines 18-20 were New Media specialization courses; in 2012-2013 there was a single 15 EC New Media specialization course, with different contents. The new 15 EC New Media course combines Sound Engineering (absent the year before), Graphics (was 3D Modelling the year before), Game Development (part of the Game Development course of the year before) and Serious Gaming (which was absent the year before)

In 2012-2013 students could choose between the math courses of lines 10 and 11; the year before it was mandatory to take both.