Programme syllabus

Degree Programme in Media Technology
Civilingenjörsutbildning i medieteknik
300.0 credits

Valid for students admitted to the education from autumn 12 (HT - Autumn term; VT - Spring term).

This is a translation of the Swedish, legally binding, programme syllabus.

Programme objectives

This program syllabus, established by the CSC Undergraduate education advisory group 2011-09-07 and 2011-10-03 and then decided by the CSC dean 2011-09-15 and 2011-10-03, is valid for students beginning their studies during the academic year 2012/13. Which courses that belong a study year is decided in the fall the year before. Please see "Study year 1" etc. or the appendices. Changes may occur in the contents of the program and in the KTH regulations, please see www.kth.se/student.

The educational programme has a technical, scientific base with a foundation in mathematics and natural science. Media Technology focuses on services and products aimed primarily at the consumer market. Therefore, the programme also offers relevant knowledge from social and behavioural science and insights into the contents and design of media. Specialized knowledge is given about technology for static media forms (text, image, print), dynamic media forms (audio, video) and interactive media forms (internet, games, dialogue systems, etc.). Each student must acquire deeper knowledge within one or two areas of media technology through the choice of specialization for study year 3 and master program for study years 4–5.

Besides the goals stated in the Swedish Higher Education Ordinance the following goals apply.

Knowledge and understanding

The Media Technology program will give the student the fundamental knowledge and abilities needed to successfully work with and from an engineering perspective solve technical, organisational, methodological, design-related, and user-related problems within the media field. The program gives knowledge about the technical as well as multi-disciplinary foundation that media and their technology for production, distribution, and consumption rely upon.

Skills and abilities
The Media Technology program will give the student prerequisites to, with a comprehensive perspective, critically, independently and creatively identify, formulate, and handle complex problems, analyze and critically evaluate different technical, organisational, and design-related solutions. The student will also have the ability to plan and and implement qualified assignments within given constraints and considering sustainability. The program will also give a foundation for further education on the research level and an ability to participate in research and development work and thereby contribute to the knowledge development within the area. The student will develop an understanding of and an ability to work in teams and to cooperate in groups with participants from different backgrounds. The student will also be able to continuously develop his/her skills and abilities.

### Ability to make judgements and adopt a standpoint

The Media Technology will gain the ability to integrate knowledge from different disciplines and experiences as well as to model, plan and evaluate products, services, systems, and processes. The student will also get an understanding of the important role of media in society, opinion building and democratic processes as of the ethical aspects of media and their contents, and the relationship between technology, contents and usage in the media. This includes a consciousness about the possibilities and limitations of technology and the responsibility of technology developers for how the technology is used.

### Extent and content of the programme

The Master’s Programme in Engineering in Media Technology is composed of 300 ECTS credits, which at normal study rate corresponds to 5 years of full-time studies (10 semesters).

The first three years (180 ECTS credits) are mainly on the first level. The final two years (120 ECTS credits) are mainly on the second level.

### Master's programs

The last two years the student takes a master's program of his/her choice. The master's programs consist of courses mainly in the second level. The education leads to a master's degree as well as a "civilingenjör" degree.

Each year a list of master's programs that the students can choose from is presented. For some master's programs there are restrictions as to choice of tracks or eligible courses.

### Language of Instruction

The language of instruction, during the first three years of the programme is mostly Swedish; although English literature will be used. The concluding two years are mostly in English. For each course the language of instruction is found in the Course and program directory on the KTH student web site.

### Eligibility and selection

In order to be accepted to the Media Technology program basic eligibility requirements as well as the following requirements must be met: Mathematics E, Physics B, Chemistry A (according to the swedish school system). All with at least a grade of Godkänd (Passed).
For eligibility requirements and selection, see the KTH admission policy

http://intra.kth.se/regelverk/utbildning-forskning/grundutbildning/antagning/1.27186?l=en_UK

Implementation of the education

Structure of the education

This program syllabus, established by the CSC Undergraduate education advisory group 2011-09-07 and then decided by the CSC dean, is valid for students beginning their studies during the academic year 2012/13. Which courses that belong a study year is decided in the fall the year before. Please see ”Study year 1” etc. or the appendices. Changes may occur in the contents of the program and in the KTH regulations, please see www.kth.se/student.

The education starts with mandatory courses in study years 1–3 including a specialization in study year 3. Currently the following specializations are offered: Image and Video Technology, Interactive Media Technology, Audio Technology, Human-Machine Interaction, Print Communication and individual specialization. Study year 3 is concluded by a first level degree project of 15 ECTS credits.

During study years 4-5 the student follows a master's program giving a specialization in subjects central to media technology. The programme is concluded during the spring semester of study year 5 with a second level degree project worth 30 ECTS credits.

The programme is structured such that the student, after three study years, can apply for a Bachelor's degree and then continue his/her studies on a Master’s programme at KTH or another university in Sweden or abroad or start a working career.

Academic year

The KTH academic year is 40 weeks, divided into four periods. Each study period is followed by an examination period. There are also three re-examination periods.

For details about the structure of the academic year see http://www.kth.se/student/schema/1.1007?l=en_UK

Courses

The programme is course-based. Lists of courses are included in appendix 1.

The programme consists of compulsory, conditionally elective and elective courses. The compulsory courses are defined for each study year and specialisation in course lists. Course goals, prerequisites, contents and examination requirements can be found in the respective course plans in the course and program directory on the KTH student web..

Elective courses can be chosen from the KTH course offer for Master of Science in Engineering programmes. Also, courses from other universities/higher education institutions can be recognized for credit, if the degree requirements are fulfilled.
For elective courses, the following restrictions apply:

- Elective courses can not be taken in study year 1
- Only in exceptional cases can elective courses be taken in study year 2
- The number of credits that can be chosen per semester can be limited.
- Elective courses may not overlap a course already taken to a considerable extent.
- Higher education preparation courses may not be counted as elective course.
- Courses on lower levels within a subject than the programme courses may not count as elective courses.

**Grading system**

Courses in the first and the second cycle are graded on a scale from A to F. A-E are passing grades, A is the highest grade. The grades pass (P) and fail (F) are used for courses under certain circumstances.

Since the grading systems differ very much between different countries, the grades are not translated from exchange studies abroad.

**Conditions for participation in the programme**

**Semester enrollment**

At the start of each semester the student is required to make a study enrollment for the next semester at My pages.

The study enrollment is required for taking new courses and for study results to be registered.

**Selection of courses**

Admission to compulsory courses during study years 1–2 is currently, in most cases, automatic. Students choosing among alternative compulsory courses have to submit a special form.

From study year 3 and on the student is responsible for applying to all courses he/she wishes to take. This also applies to compulsory courses. The application for admission to a course is done according to instructions from the CSC school no later than

- May 15th for the fall semester
- November 15th for the spring semester

Applications made after this date are only granted if there are vacancies in the courses. Applications to language courses with prerequisites should be preceded by a qualification test.

In a few courses, the number of participants is limited. Selection is done by the school responsible for the course.

A student may only take courses that are included in the study plan.

**Selection of conditionally elective courses i mathematics**
The program offers a number of conditionally elective courses in mathematics that can be taken from study year 2. The student must take at least two of these in order to fulfill the requirements for a degree. Application for a conditionally elective course in mathematics is made on a form submitted to the CSC program office.

**Choice of specialization**

During the third study year the student follows one of the specializations offered. The choice of specialization, courses to be taken within the specialization and any elective courses are done according to instructions from the CSC program office.

**Choice of master's program**

The student must apply for the master's program he/she wishes to follow during study years 4–5 according to instructions given by the CSC program office.

**Course registration**

The student must register with the school responsible for the course at the start of each course, and also report to the school responsible for the course if the studies are discontinued.

Registration to a course requires formal acceptance to the course (by the school responsible for the course). Applications should be according to instructions from the CSC school.

**Conditions for being promoted to the next level**

The following promotion requirements apply in order to participate in the next level of the education.

**Requirements for promotion from study year 1 to study year 2:**
A total of at least 45 ECTS credits from study year 1 must be completed.

**Requirements for promotion from study year 2 to study year 3:**
A total of at least 90 ECTS credits from study years 1 and 2 must be completed at least 50 higher education credits from study year 1.

**Requirements for promotion from study year 3 to study year 4:**
A total of at least 150 ECTS credits from study years 1-3 must be completed whereof 110 ECTS credits from study year 1-2, and the first level degree project.

**Requirements for promotion from study year 4 to study year 5:**
In addition to what applies for promotion to study 4, at least 45 higher education credits from study year 4 must be completed.

**Individual study plan**

Students who do not fulfill these requirements must – in cooperation with the CSC program office – make an individual study plan for continued studies.

Please see the KTH regulations: http://intra.kth.se/regelverk/utbildning-forskning/grundutbildning/1.27217?l=en_UK
Recognition of previous academic studies

Credits for studies at another university can be transferred. An application form can be found on the KTH Student pages.

The application form is submitted to the CSC program office.

For in-depth information about the KTH policy for credit transfer, see http://intra.kth.se/regelverk/utbildning-forskning/grundutbildning/prestationer/1.27200?l=en_UK

Studies abroad

Students at the Media Technology program have the opportunity to study one or two semesters abroad through agreements KTH has with universities within and outside the EU. Exchange studies are not appropriate during the first and second study years. It is also possible to make the final degree project (second cycle) abroad.

For more information contact the international coordinator at CSC.

More information can be found on the KTH student web and at http://intra.kth.se/regelverk/utbildning-forskning/grundutbildning/utbytesstudier?l=en_UK

Degree project

Degree project, first cycle
A degree project of 15 ECTS credits (first cycle) is done during study year 3.

KTH comprehensive rules and guidelines for degree projects of 15 ECTS credits for Degree of Bachelor of Science 180 ECTS credits, and grading of the project are found in the KTH regulations.

http://intra.kth.se/regelverk/utbildning-forskning/grundutbildning/examensarbete/1.27211?l=en_UK

Degree project, second cycle
A second degree project of 30 ECTS credits (second cycle) is done during study year 5.

KTH comprehensive rules and guidelines for degree projects of 30 ECTS credits for Degree of Master of Science in Engineering, Degree Programme in Computer Science and Technology 300 ECTS credits, and grading of the project is found in the KTH regulations.

http://intra.kth.se/regelverk/utbildning-forskning/grundutbildning/examensarbete/1.27205?l=en_UK

In addition the following applies:

Not only the requirements set by the selected Master program to begin the degree project apply but also the following: The student must have 240 ECTS credits from completed courses within the Master of science of engineering program and may have at the most three unfinished compulsory courses from study years 1–3.
Degree

Application for graduation
Students may apply for the following degrees: Degree of Bachelor of Science and Degree of Master of Science in Engineering, Degree Programme in Media Technology. Students can also request for Degree of Master of Science (Two Years) if the requirements for this degree are met.

Instructions for the application are available on the KTH student web.

Conditions for the Degree of Bachelor of Science 180 ECTS credits

The Degree of Bachelor of Science is received if the student applies for graduation after the completion of the 3rd study year and fulfills the national degree requirements, i.e. has completed courses corresponding to 180 ECTS credits, including

- courses of at least 25 ECTS credits within mathematics-natural sciences,
- courses of at least 90 ECTS credits (including 15 ECTS credits from the degree project) with successive progression in the main field of education.

Degree name
Teknologie kandidatexamen
Degree of Bachelor of Science

Conditions for the Degree of Master of Science in Engineering 300 ECTS credits

The Master of Science in Engineering degree is received after completing the programme. The programme is designed so that the student fulfills the national degree requirements and has completed courses corresponding to 300 ECTS credits, including

- courses of at least 45 ECTS credits within mathematics-natural sciences, and, in addition, courses of at least 180 higher ECTS credits (including 30 ECTS credits from the degree project) in the subjects central to the technical area
- courses of at least 90 ECTS credits in the second cycle, whereof at least 60 ECTS credits (including 30 ECTS credits from degree project) in the subjects central to the technical area, i.e. media technology

Degree name
Civilingenjörsexamen
Degree of Master of Science in Engineering, Degree Programme in Computer Science and Technology

Conditions for Degree of Master of Science (Two Years) 120 ECTS credits.
See KTH regulations (see link below).

Degree name
Teknologie masterexamen
Degree of Master of Science (Two Years)

Information on degree requirements in the KTH regulations:
http://intra.kth.se/regelverk/utbildning-forskning/grundutbildning/examina/1.27227?l=en_UK

Appendix 1 - Course list
Appendix 2 - Programme syllabus descriptions
# Appendix 1: Course list

Degree Programme in Media Technology (CMETE), Programme syllabus for studies starting in autumn 2012

## General courses

### Year 1

#### Mandatory courses (64.0 Credits)

<table>
<thead>
<tr>
<th>Course code</th>
<th>Course name</th>
<th>Credits</th>
<th>Edu. level</th>
</tr>
</thead>
<tbody>
<tr>
<td>DH1609</td>
<td>Communication and information</td>
<td>7.5 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>DM1572</td>
<td>Introduction to Media Technology</td>
<td>7.5 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>DM1573</td>
<td>Graphic Arts Technology</td>
<td>7.5 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>DM1578</td>
<td>Program Integrating Course in Media Technology</td>
<td>7.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td></td>
<td>3 cr belong to study year 1, distributed as 0,75 cr each study period</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MF1035</td>
<td>Electrical Engineering, Basic Course Media</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>SF1624</td>
<td>Algebra and Geometry</td>
<td>7.5 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>SF1625</td>
<td>Calculus in One Variable</td>
<td>7.5 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>SF1626</td>
<td>Calculus in Several Variable</td>
<td>7.5 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>SK1120</td>
<td>Waves</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
</tbody>
</table>

#### Optional courses

<table>
<thead>
<tr>
<th>Course code</th>
<th>Course name</th>
<th>Credits</th>
<th>Edu. level</th>
</tr>
</thead>
<tbody>
<tr>
<td>SF1611</td>
<td>Introductory Course in Mathematics I</td>
<td>1.5 hp</td>
<td>First cycle</td>
</tr>
</tbody>
</table>

## Supplementary information

Batch 11 take the first study year during the academic year 2012/13.

The course DM1578 Program Integrating Course in Media Technology is taken during study years 1–3 and divided into 3 cr during year 1, 2 cr during year 2, and 2 cr during year 3.
### Year 2

**Mandatory courses (65.0 Credits)**

<table>
<thead>
<tr>
<th>Course code</th>
<th>Course name</th>
<th>Credits</th>
<th>Edu. level</th>
</tr>
</thead>
<tbody>
<tr>
<td>AD1RD1</td>
<td>Reflective Design Process</td>
<td>7.5 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>DD1310</td>
<td>Programming Techniques</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>DD1320</td>
<td>Applied Computer Science</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>DM1578</td>
<td>Program Integrating Course in Media Technology</td>
<td>7.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>DM1580</td>
<td>Video Technology</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>DT1130</td>
<td>Spectral Transforms</td>
<td>7.5 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>DT1174</td>
<td>Sound as an Information Medium</td>
<td>9.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>ME1003</td>
<td>Industrial Management, Basic Course</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>SF1901</td>
<td>Probability Theory and Statistics</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>SK1140</td>
<td>Photography for Media</td>
<td>4.0 hp</td>
<td>First cycle</td>
</tr>
</tbody>
</table>

**Supplementary information**

Batch 12 take the second study year during the academic year 2013/14.

### Year 3

**Mandatory courses (41.5 Credits)**

<table>
<thead>
<tr>
<th>Course code</th>
<th>Course name</th>
<th>Credits</th>
<th>Edu. level</th>
</tr>
</thead>
<tbody>
<tr>
<td>AK2203</td>
<td>Media, Technology and Culture</td>
<td>7.5 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>DD1334</td>
<td>Database Technology</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>DH2620</td>
<td>Human-Computer Interaction, Introductory Course</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>DM129X</td>
<td>Degree Project in Media Technology, First Cycle</td>
<td>15.0 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>DM1578</td>
<td>Program Integrating Course in Media Technology</td>
<td>7.0 hp</td>
<td>First cycle</td>
</tr>
</tbody>
</table>

**Supplementary information**

The first specialization is taken during study year 3.

The course DM1578 Program Integrating Course in Media Technology is taken during study years 1–3 and divided into 3 cr during year 1, 2 cr during year 2, and 2 cr during year 3.

Please note that you have to apply for courses up to 60 credits.

### Year 4
Mandatory courses (7.5 Credits)

<table>
<thead>
<tr>
<th>Course code</th>
<th>Course name</th>
<th>Credits</th>
<th>Edu. level</th>
</tr>
</thead>
<tbody>
<tr>
<td>DM2573</td>
<td>Sustainability and Media Technology</td>
<td>7.5 hp</td>
<td>Second cycle</td>
</tr>
</tbody>
</table>

Supplementary information

Media batch 12 will be in study year 4 during 2015/16.

During study years 4 and 5 the students follow a master program of their choice. For each year a list of master programs that may be chosen is established.

Year 5

Supplementary information

Batch 11 take the fifth study year during the academic year 2015/16.

During study years 4 and 5 the students follow a master program of their choice. For each year a list of master programs that may be chosen is established

Image and Video Technology (BVT)

Year 3

Mandatory courses (21.0 Credits)

<table>
<thead>
<tr>
<th>Course code</th>
<th>Course name</th>
<th>Credits</th>
<th>Edu. level</th>
</tr>
</thead>
<tbody>
<tr>
<td>DD2423</td>
<td>Image Analysis and Computer Vision</td>
<td>7.5 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>EL1150</td>
<td>Introductory Matlab Course</td>
<td>1.5 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>EQ1260</td>
<td>Signal Processing</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>SK2375</td>
<td>Optics, Supplementary Course for the Media Programme</td>
<td>6.0 hp</td>
<td>Second cycle</td>
</tr>
</tbody>
</table>

Supplementary information

Note that you have to read courses for 60 credits during the study year.

Computer Science (CPS)

Year 3

Mandatory courses (24.0 Credits)
Course code  Course name                                      Credits  Edu. level
DD2310       Java Programming for Python Programmers       1.5 hp   Second cycle
DD2352       Algorithms and Complexity                    7.5 hp   Second cycle
DD2385       Software Engineering                          6.0 hp   Second cycle
SF1630       Discrete Mathematics                          9.0 hp   First cycle

Supplementary information

Note that you have to read courses for 60 credits during the study year.

Interactive Media Technology (INMT)

Year 3

Mandatory courses (21.0 Credits)

Course code  Course name                                      Credits  Edu. level
DH2641       Interaction Programming                       6.0 hp   Second cycle
DM2517       XML for Publishing                             7.5 hp   Second cycle
DM2518       Mobile Development with Web Technologies       7.5 hp   Second cycle

Optional courses

Course code  Course name                                      Credits  Edu. level
DD2310       Java Programming for Python Programmers        1.5 hp   Second cycle
DH2642       Interaction Programming and the Dynamic Web   7.5 hp   Second cycle

Supplementary information

For 60 credits this study year; follow DH2642 instead of DH2641.

Audio Technology (LJD)

Year 3

Mandatory courses (22.5 Credits)

Course code  Course name                                      Credits  Edu. level
DT2112       Speech Technology                               7.5 hp   Second cycle
DT2213       Musical Communication and Music Technology      7.5 hp   Second cycle
Programme syllabus for Degree Programme in Media Technology batch autumn 12.

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DT2410 Audio Technology

Supplementary information

Note that you have to read courses for 60 credits during the study year.

Print Communication (TRK)

Year 3

Mandatory courses (30.5 Credits)

<table>
<thead>
<tr>
<th>Course code</th>
<th>Course name</th>
<th>Credits</th>
<th>Edu. level</th>
</tr>
</thead>
<tbody>
<tr>
<td>DM2517</td>
<td>XML for Publishing</td>
<td>7.5 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>DM2529</td>
<td>Digital Images for Publication</td>
<td>7.5 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>DM2531</td>
<td>Graphic Arts Production</td>
<td>7.5 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>SK2380</td>
<td>Technical Photography</td>
<td>8.0 hp</td>
<td>Second cycle</td>
</tr>
</tbody>
</table>

Note that you have to read courses for 60 credits during the study year.
Appendix 2: Specialisations

Degree Programme in Media Technology (CMETE), Programme syllabus for studies starting in autumn 2012

Image and Video Technology (BVT)
Computer Science (CPS)
Interactive Media Technology (INMT)
Audio Technology (LJD)
Print Communication (TRK)