



JÖNKÖPING UNIVERSITY
School of Engineering

PROGRAMME SYLLABUS
Visual Effects, 120 credits

Programmestart: Autumn 2018



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Visual Effects, 120 credits

Visuella effekter, 120 högskolepoäng

Programme code: TGVE7

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Version: 2

Programmestart: Autumn 2018

Education Cycle: First-cycle level

Title of qualification

Higher Education Diploma with specialisation in Visual Effects

Programme overview

Background

Catering to the increasing needs of the film industry, in recent years, the field of visual effects (VFX) has seen rapid growth and technological development. Initially, visual effects were created with optical techniques. At present, however, VFX sequences are produced digitally and depend on rapid technological advances, the interests and demands of the end customers as well as the contribution of novel VFX techniques to new art forms and innovations within the cinematographic industry.

As the international film industry breaks new ground, the demands on visual effects artists are increasing. Digital processing is now a requirement in all types of visual productions. VFX artists who can satisfy both the artistic and technical needs of the industry are in high demand within stills, motion film, advertisement and game production.

The industry is expanding on a global scale and Swedish companies have seen great success, attracting international attention for their visual effects work in series such as *Westworld*, *Black Sails* and *The Walking Dead*.

Objectives

Visual effects have a significant impact on the production of all types of moving images. Covering all phases of production, from planning to delivery, the programme provides a comprehensive picture of the VFX production pipeline, including direct collaboration with producers of for instance films or commercials.

The VFX industry and its artists create new imagery and contribute in meeting the ever-increasing demand for visual effects within the entertainment industry. With lecturers from the VFX industry, live projects and multidisciplinary collaboration, the programme offers versatile training and the opportunity to specialise in 3D visualisation or digital compositing.

Areas of employment after graduation

The Digital Compositing profile leads to employment as a compositor, whose main task is to process recorded material and combine such material with computer-generated images.

Graduates of the 3D Visualisation profile pursue careers as 3D generalists, whose main task is to

create and process the virtual models and environments that the compositor will later integrate with live-action material. After two years of study, the student will obtain a Higher Education Diploma with specialisation in Visual Effects and be ready to pursue a career within his or her specialisation. Most of our graduates find employment, set up their own business or pursue further university studies in the fields of technology and art.

School of Engineering education concept

All two-year first-cycle degree programmes at the School of Engineering (JTH) apply a common education concept. The concept is holistic in character, emphasising collaboration with industry, internationalisation and an entrepreneurial spirit. Besides programme-specific technical skills, leadership, communication, enterprise and sustainable development are essential parts of the concept.

Collaboration with industry

The School of Engineering works closely with industry. Collaboration with industry takes place in varying forms throughout our different degree programmes. One example is the industrial placement course (NFK) that is included in all School of Engineering programmes. The purpose of this course is for the students to gain an understanding of their future work tasks and the relation of those tasks to the students' training.

Internationalisation

The students are, for instance, afforded the opportunity to practise their language and international communication skills through international student exchange. The School of Engineering has some 70 partner universities in different parts of the world and participates in several international student exchange programmes. Owing to the extensive student exchange, a great number of courses at the School of Engineering are offered in English.

Entrepreneurial spirit

Each degree programme as a whole aspires to instil in the students an entrepreneurial spirit. To this end, collaboration with industry, leadership training, live briefs in e.g. project-based courses and, especially, studies in economics are decisive.

Leadership and communication

This part of the concept includes, among other things, practising verbal and written communication, working in projects, leading and motivating others as well as gaining an understanding of decision processes in businesses and organisations.

Enterprise

The students gain basic knowledge in economics, marketing and business planning. This knowledge is later deepened and, at the same time, integrated into its technological context. Engineers and technicians with such knowledge are much coveted in a wide variety of industry sectors.

Sustainable development

The students acquire knowledge of sustainability issues as well as environmental and human aspects of future production chains and products.

The teaching is fully integrated into its technological context, examining questions of sustainability from social, economic and ecological perspectives.

Project-based teaching

In working life, it is very common for groups or individuals to assume responsibility for projects of different sizes. To prepare the students for such responsibility, in some of the degree programme courses, live projects are carried out in direct collaboration with industry.

Student voice

The student voice is attributed great importance and seen as a crucial part of the School of Engineering's continuous quality development. Owing to the inclusion of student representatives in all committees, councils and decision-making bodies, the students can actively influence their education.

Objectives

On completion of the programme, the student shall fulfil the Higher Education Diploma learning outcomes laid down in the Higher Education Ordinance (h) and learning outcomes that are specific to the School of Engineering (j):

General learning outcomes

Knowledge and understanding

1. demonstrate knowledge and understanding in the principal field (main field of study) of the study programme, including awareness of the disciplinary foundation of the field and knowledge of some applicable methodologies in the field, and (h)
2. demonstrate knowledge of enterprise (economics, entrepreneurship, business planning, marketing) in relation to businesses within the relevant branch of technology. (j)

Competence and skills

3. demonstrate the ability to search for, gather and critically interpret the relevant information in order to formulate answers to well defined issues in the main field of study, (h)
4. demonstrate the ability to present and discuss his or her knowledge with different audiences, (h)
5. demonstrate the skills required to work autonomously with specific tasks in the main field of study, (h)
6. demonstrate the ability to design products and systems, considering economic, social and ecological aspects of sustainable development, and (j)
7. demonstrate the ability to put acquired knowledge into practice as well as insight into the future profession. (j)

Judgement and approach

8. demonstrate knowledge about and be equipped to deal with ethical issues in the main field of study, and (h)
9. demonstrate the ability to adopt an interdisciplinary approach and apply a system perspective. (j)

Programme-specific learning outcomes

In addition to the general learning outcomes, the student shall fulfil the following programme-specific learning outcomes:

Knowledge and understanding

10. demonstrate an understanding of the requirements of his or her specialisation and knowledge about aspects of quality in production of digital material and delivery of such material to colleagues and end customers, and
11. demonstrate an understanding of photorealistic techniques and theories.

Competence and skills

12. demonstrate the ability to plan and evaluate production projects according to visual effects practices, and
13. demonstrate the ability to produce photorealistic image sequences by independently assessing, selecting and using appropriate techniques with respect to a given specification of requirements.

Judgement and approach

14. demonstrate the ability to analyse and reflect on the significance of creative and technical processes for the individual, working group, production process and final result when working with end customers, and
15. demonstrate the ability to adopt a solution-oriented approach in the production of

photorealistic material.

Contents

Programme principles

The programme has an international profile and is offered in close collaboration with the visual effects industry. Most of the teachers in the programme are VFX professionals who work both in Sweden and abroad.

The programme has good relations with leading international VFX companies. Moving Picture Company, Double Negative, Pixomondo, Framestore and Industrial Light and Magic are some of our partners. In Sweden, the programme is closely tied to Goodbye Kansas, Important Looking Pirates, Filmgate, Chimney Group and Swiss International AB, among others.

In addition, our students reap continuous benefits from our close collaboration with the Swedish Visual Effects Association (Swedish VFX trade association).

The content of the programme is based largely on inter-professional collaboration. A scientific approach, technical skills, good communication and a solution-oriented attitude are seen as key factors for employability.

The courses are structured according to the three phases of production: pre-production, production and post-production. Planning, collection and processing of measurement data from shooting locations as well as production of visual effects are carried out with respect to working methods, time, structure and quality assurance requirements.

Each year, a recruitment day is organised before the start of the concluding industrial placement course, which corresponds to approximately one fourth of the total duration of the programme. Both Swedish and international companies participate in the recruitment day interviews, which take place in Eksjö.

In the first year of the programme, there is an opportunity to go to Stuttgart to visit one of Europe's biggest VFX conferences, FMX, where most of the major VFX companies give inspirational lectures and recruit new personnel.

Programme progression

In the first semester, the students acquire basic theoretical and practical knowledge in the field of visual effects. In the second semester, they undertake extensive collaboration projects, in which much importance is attributed to supervision and quality assurance of material. Both the theoretical and technical aspects are to be applied in collaborative settings, adding another dimension to the problems with which the students are faced.

During the third semester, the students improve their technical skills and run further collaboration projects, which, at this point, require the students to consider time estimates, budget, production processes and project execution from a client perspective. These projects are followed by another collaboration project, where production quality is key. The projects should see the students critically assessing their work as well as analysing and reflecting on a number of research questions. Preparing the students for the demands and challenges of their future profession, during the projects, the students also practise their ability to work both independently and in teams as well as to shoulder responsibility.

In the end of the third semester, the students are familiarised with the scientific approach to knowledge in order to gain a deeper understanding of the field of study and its scientific foundation. At this point, the students complete a degree project the purpose of which is for the students to improve their ability to seek and assess knowledge at a relevant scientific level.

In the fourth semester, the industrial placement course is taken in Sweden or abroad. The course affords the students the opportunity to deepen, strengthen, expand and integrate the knowledge acquired in the programme.

Progression within the field of visual effects and the programme profiles is guaranteed partly by increasing demands in terms of student independence and a gradually deepened understanding of the client perspective, which encompass, among other things, the students' own contributions to the production process, financial considerations and quality optimisation with regard to client

requirements. The specialised courses in the programme should see the students independently identifying and solving problems as well as undertaking multidisciplinary projects with respect to a sustainability perspective.

Courses

Mandatory courses

| Course Name | Credits | Main field of study | Specialised in | Course Code |
|--|---------|---------------------|----------------|-------------|
| Introduction to CGI (Computer Generated Imagery) | 6 | | G1N | TCGG13 |
| Digital Image Management | 6 | | G1F | TDBK14 |
| Final Project Work in Visual Effects | 9 | | G1E | TEEM17 |
| Industrial Placement Course in Visual Effects | 27 | | G2F | TNEN17 |
| Post Production, Flows and Processes I | 6 | | G1F | TPFK14 |
| Post Production, Flows and Processes II | 9 | | G1F | TF2K14 |
| Pre Production | 6 | | G1F | TPEK13 |
| Research Methods and Communication | 6 | | G1N | TVEG13 |

Elective courses

| Course Name | Credits | Main field of study | Specialised in | Course Code |
|--|---------|---------------------|----------------|-------------|
| 3D Animation ¹ | 9 | | G1F | T3AK17 |
| 3D I ¹ | 9 | | G1N | T3DG14 |
| 3D II ¹ | 9 | | G1F | T3DK18 |
| 3D III Look Development ¹ | 9 | | G1F | T33K14 |
| 3D III Technical Direction ¹ | 9 | | G1F | TTDK14 |
| Compositing I ² | 9 | | G1N | TC1G14 |
| Compositing II ² | 9 | | G1F | TC2K17 |
| Compositing III ² | 9 | | G1F | TC3K14 |
| On Set Supervision 3D ¹ | 9 | | G1F | TO3K15 |
| On Set Supervision DC ² | 9 | | G1F | TODK15 |
| Rotoscoping and Plate Preparation ² | 9 | | G1F | TRFK17 |

¹ Elective block 1

² Elective block 2

Programme overview

Year 1

| Semester 1 | | Semester 2 | |
|---|--|---|---|
| Period 1 | Period 2 | Period 3 | Period 4 |
| Introduction to CGI (Computer Generated Imagery), 6 credits | Pre Production, 6 credits | Digital Image Management, 6 credits | Post Production, Flows and Processes I, 6 credits |
| 3D I ¹ , 9 credits | 3D Animation ¹ , 9 credits | 3D II ¹ , 9 credits | On Set Supervision 3D ¹ , 9 credits |
| Compositing I ² , 9 credits | Rotoscoping and Plate Preparation ² , 9 credits | Compositing II ² , 9 credits | On Set Supervision DC ² , 9 credits |

Year 2

| Semester 3 | | Semester 4 | |
|--|---|---|----------|
| Period 1 | Period 2 | Period 3 | Period 4 |
| Post Production, Flows and Processes II, 9 credits | | Industrial Placement Course in Visual Effects, 27 credits | |
| <i>3D III Look Development</i> ¹ , 9 credits | Research Methods and Communication, 6 credits | | |
| <i>3D III Technical Direction</i> ¹ , 9 credits | Final Project Work in Visual Effects, 9 credits | | |
| <i>Compositing III</i> ² , 9 credits | | | |

¹ Elective block 1

² Elective block 2

Teaching and examination

All courses are given in English. Examinations are held on a course or module basis. For forms of examination and grading criteria, see the respective course syllabi. The programme overview shows the general year-to-year structure of the programme, which, if needed, may be altered in the course of the programme. For an up-to-date programme overview, see <http://www.jth.ju.se>.

Prerequisites

General entry requirements and English 6 or English B with required grade passed in the Swedish upper secondary school system or international equivalent.

Continuation Requirements

To commence the second year of the programme, the student must have earned at least 30 credits in the first year.

Qualification Requirements

To obtain a Higher Education Diploma with specialisation in Visual Effects, students must complete a minimum of 120 credits in accordance with the current programme syllabus.

Quality Development

The programme's management team, director, teachers and students work together to improve the quality of the programme and its courses. On completion of a particular course, all the students who attended the course are given the opportunity to complete a written evaluation of the course. Correspondingly, on completion of the final semester of the programme, all the students who attended the programme are afforded the opportunity to make a written evaluation of the programme. The evaluation results, which are to serve as the basis for improvements, are reported to the head of department, programme director and course coordinators concerned as well as to the educational director. The head of department or equivalent and the programme director raise questions of programme development at programme management team meetings.

Student representatives, the educational director and study counsellors meet on a regular basis to discuss recently completed programme courses.

The head of HI Education is a permanent member of the School of Engineering's councils of education.

Other Information

In case an applicant does not meet the specified prerequisites, he or she may request that other skills and competencies previously acquired elsewhere be deemed equivalent to said prerequisites. The aim is then to assess the applicant's overall competence and chances of completing the programme in question. Other skills and competencies may refer to knowledge and skills gained in working life, while staying abroad for a sustained period of time or in other courses.

Courses that are part of the programme may be taken as free-standing courses to the extent that there are places available. For the applicable prerequisites, see the respective course syllabi. Admission is conducted in accordance with “Admission Regulations for First- and Second-Cycle Courses and Study Programmes”.

This programme syllabus is based on “Regulations and guidelines for first-, second-, and third-cycle education at Jönköping University (JU)”.