

# Master Scientific Illustration

**Study Program**

# Introduction

The curriculum consists of three themes:

1. 'Human' (A),
2. 'Animal' (B)
3. 'Surgical intervention in man and animal' (C).

Several workshops and guest lectures will be given besides the regular curriculum (E).

The three themes consist of 3 to 5 curriculum parts. Each part consists of one or more assignments in which several aspects of scientific illustration and drawing techniques will be trained.

The level of the assignments has an increasing learning curve, finally resulting in the professional practice level (A3, B5, C3 en C4).

The final graduation (G) consists of three parts:

1. a graduation project, resulting in a printed publication.
2. oral examination
3. graduation exhibition

The student makes a portfolio with artwork, which are made during the study.

The printed publication and the portfolio can serve as promotional material for the introduction in professional practice.

## Working methods:

### *Atelier Model:*

The central teaching method is that the students work independently on the visualisation task in the academy studio. The central learning experience for the student is created here and supported by individual assistance, which the student receives during the work, directed by the core lecturers or as required by the students.

Also the other students play an important role by discussing the subject with each other and exchanging ideas.

### *Self-study:*

At the master's level, students should be able to gain a large part of their necessary knowledge and insight by working on their assignments.

### *Lab practice:*

During this lab practice the student learns to dissect, to observe and to record. These practical sessions are supported by instruction lectures. Students take part in the practical in groups.

### *Life drawing class:*

Classroom model study, under supervision.

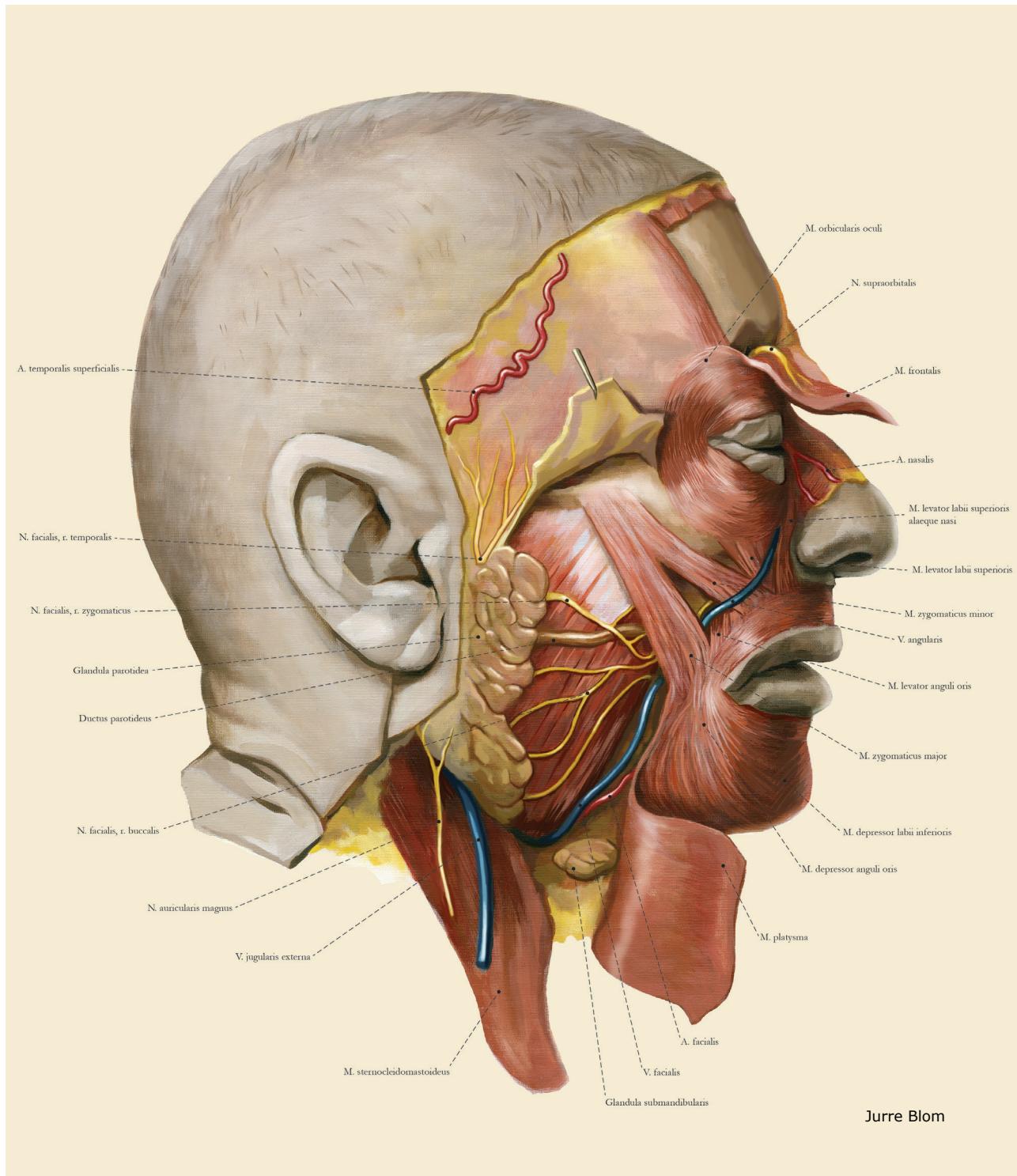
### *Practical at the Academic Hospital Maastricht (Maastricht University Medical Center+):*

The students observe during a surgical procedure and make sketches, notes and photos.

## Human

The theme 'Human' includes the following components:

1. the skeleton of the torso
2. the anatomical model of the torso
3. the anatomical specimen



## A1 Skeleton of the torso

### Techniques and materials:

Graphite pencil 2H-HB-2B, standard paper 100x70cm, 200 grs

### Assignment (deadlines in schedule):

- Draw with pencil in several grades a ventral view of the skeleton of a human torso (vertebral column, thorax and pelvis) and the scapula and clavicular, as detailed as possible (scale 2:1).
- Finally add the nomenclature in Latin on transparent, or scan the drawing and make a layout with the nomenclature, in the computer.

### Learning Objectives:

This assignment serves as an initial introduction to anatomy (for students with a visual/design background) or intensive observational drawing (for students with a science background). Teachers have the opportunity to assess students' skills in these two areas. In Assignment A1, students explore the form and function of the skeleton through observation, measurement, and drawing. In addition to acquiring factual anatomical knowledge and familiarizing themselves with Latin terminology \*1), they should be skilled in the discipline of observation and, as a result, understand the three-dimensional relationship between the skeleton and internal organs. The student will practice: form and negative space, proportions, simple foreshortening perspective, and precise drawing skills (where proportion and form are checked using a ruler/compass tools).

\*1) The aim is not to master as complete as possible a quantity of Latin names, but the students are taught that mastering a basal rate of Latin is necessary during their studies and in practice, to avoid elementary mistakes in the artwork.

\*2) Prior to the first dissecting room visit is a "dissecting room introduction" organized. This introduction is obligatory.

Competences: I - IV

Working method:

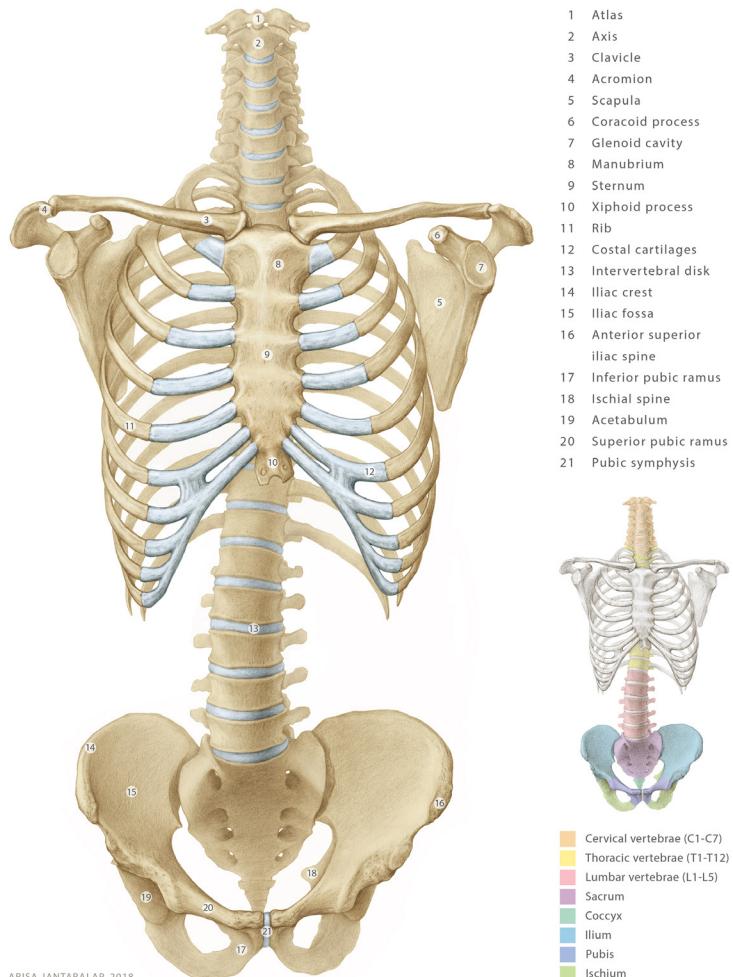
Atelier Model

Self-study

Access requirement: Non

Obligation to attend: The introductions of the curriculum components are compulsory. The student manages his/ her own time after the introduction

Contact hours: Every day there is a teacher present and available for consultation and feedback. The contact hours are varying.



## A2 The anatomical model of the torso

**Techniques and materials:** Graphite pencil, standard paper/ quality pencil paper, anatomical atlases.

**Assignment (deadlines in schedule):**

In this assignment we want you to interpret one human organ of free choice taken from the Somso model as a “realistic”, organic structure by taking different references into account.

This assignment is split into three steps:

1. Research
2. Sketch phase
3. Interpretation and final elaboration.

**Step 1. Research**

- Make use of the atlases from our collection and research the three most important systems of the human body, the digestive, the circulatory and the respiratory system.
- Also investigate the different illustrative styles and visual solutions you can find in the different atlases as discussed in the lecture.
- Feel free to use any learning method you like to get more familiar with the anatomical structures: you can e.g., make sketches and write the Latin and/ or English terms down.

**Step 2. Sketch phase**

- Make a quick sketch (one working day max.) of the entire Somso model size 1:1 on standard drawing paper according to your observation (as the plastic model you see).

**Step 3. Interpretation and final elaboration.**

- Choose one single organ to make a “realistic”, not plastic like, interpretation.
- Make use of the different references (atlases) to get inspiration on how different surfaces/ structures can be depicted.

**Learning Objectives:**

In assignment A2 the student practices: the spatial context 2D-3D, proportions, the principles of form and shapes (convex/ concave). The student acquires anatomical knowledge concerning the gastrointestinal tract (digestive system), respiratory tract (airways) and circulatory tract (heart and blood vessels). Furthermore, the student learns to convert a plastic model into a convincing realistic anatomy, with an emphasis on tissue behavior and surface structure. Gaining this anatomical knowledge also serves as a preparation

*Competences: I - IV*

*Working method:*

*Atelier Model*

*Self-study*

*Access requirement: Non*

*Obligation to attend: The introductions of the curriculum components are compulsory. The student manages his/ her own time after the introduction*

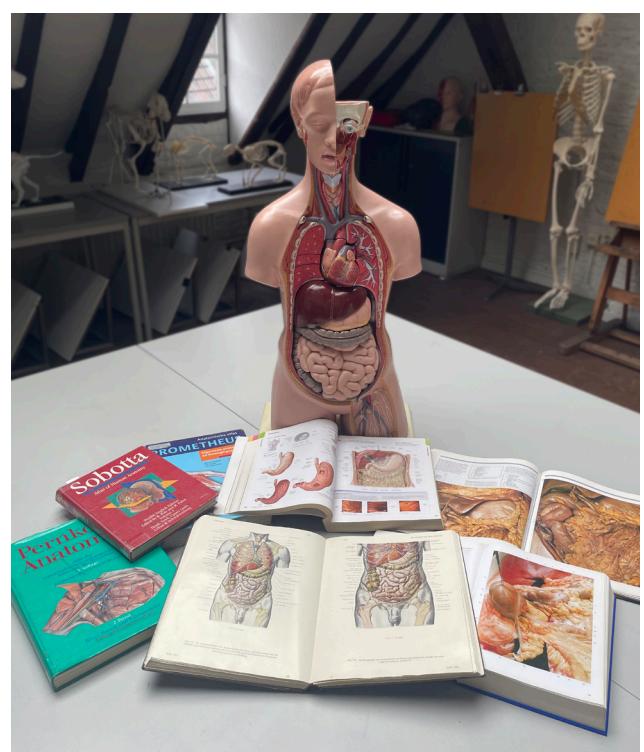
*Contact hours: Every day there is a teacher present and available for consultation and feedback. The contact hours are varying.*

for the anatomy lab practice (A3).

The student becomes more familiar with the human anatomy in order to improve his future communication with medical specialists.

The student is familiar with the different anatomical atlases in order to choose the references according to the illustration's necessities.

The student can combine multiple references (Somso model, drawings, photo material) in order to create own but convincing interpretations.



## A3a The anatomical specimen

### Techniques and materials:

Graphite pencil, watercolour, (digital) photography, paper 160/200 grs, Saunders watercolour paper

### Assignment (deadlines in schedule): The Anatomical Specimen, dissection and registration

- Dissect a part of the human body after consultation with the teachers.
- Draw with pencil in several grades a series of registrations as detailed as possible of several dissection steps (number and view in consultation with the teacher). Scale 1:1.

### Learning Objectives:

Component A3 requires students to engage in dissection studies and record their findings, providing them with a method that will allow them to examine anatomical structures effectively and to represent these structures accurately. Students prepare for the dissections by studying the relevant area of the body with the help of books, atlases, prosected specimens and anatomical models.

Each student dissects a part of the human body (usually an extremity) and makes a series of detailed drawings to register a number of dissection steps. Students also take photographs of the completed specimen. All data thus collected are used to produce a preliminary design (a black-and-white halftone drawing) that serves as a preparation for a detailed watercolour of the specimen. In this design light and dark can be examined. Special attention is paid to definition of textures and the choice of colours. A "translation" should be made of the colours as they are seen on the specimen to a more 'realistic' colour. The process students go through in this component (A3) is intended to simulate professional practice.

Well before students start to work on their watercolours, they study a number of anatomical atlases to examine the various technical solutions that illustrators have designed and implemented in the past.

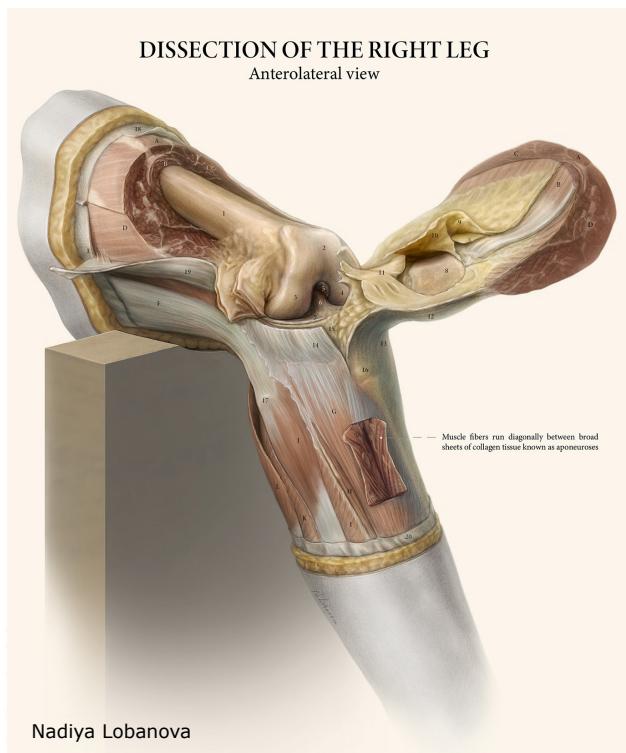
Furthermore, time management is crucial in this project. Concentrating for a long period on a delicate watercolour drawing can be exhausting. Efficient management of time and energy by alternating between assignments helps to stay focused.



## A3b The Anatomical Specimen, final artwork

### The Anatomical Specimen, final artwork

- Make an illustration in watercolour (or another technique in colour), from the same perspective as in the registration series and try to incorporate as many data (observations) as possible from your registrations. Scale 1:1.
- Keep track of hours that you spend working on the final artwork.



Competences: I - IX and XI

Working method:

Part 1: Lab practice

Part 2: Atelier Model

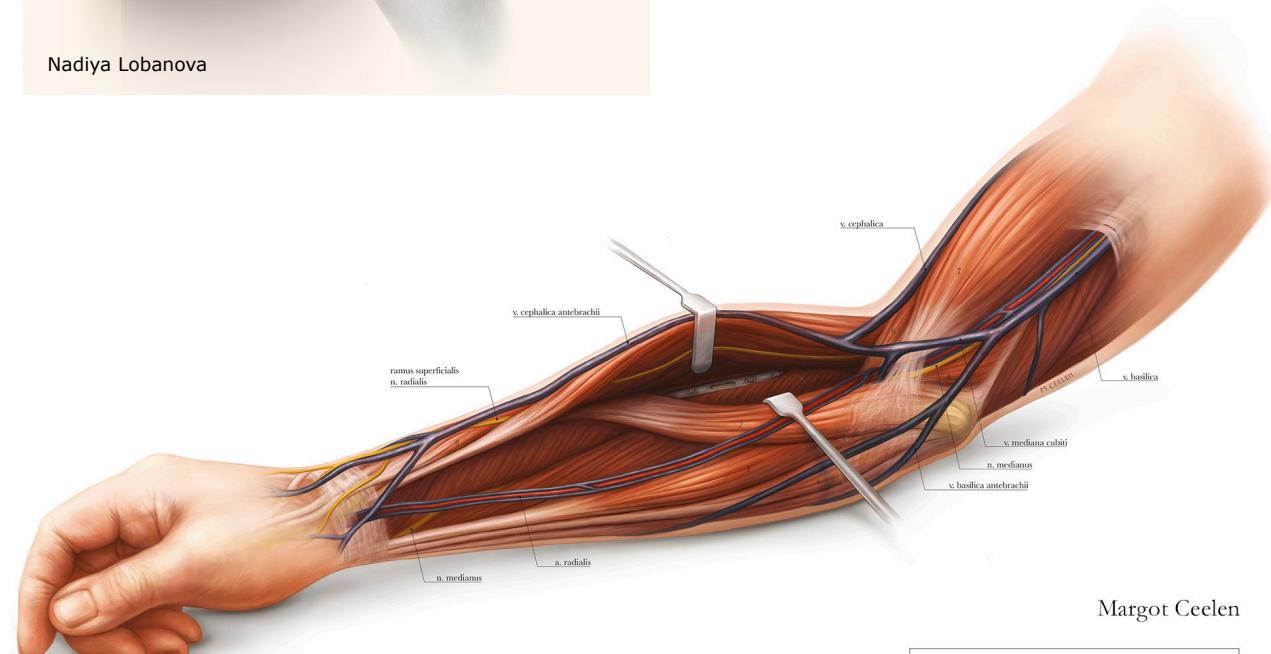
Self-study

Access requirement: A1 and A2 achieved

Obligation to attend: Students must be present at all lab lectures. If the student is prevented, he/ she must communicate this in time with the instructor.

Contact hours: Part 1: lab practice: dissection and recording ± 28 contact hours and 28 hours of independent work (in 7 days).

Part 2: final artwork: every day there is a teacher present and available for consultation and feedback. The contact hours are varying.



1. Brachioradialis	6. Brachialis
2. Pronator teres	7. Biceps brachii
3. Flexor carpi radialis	8. Abductor pollicis longus
4. Palmaris longus	9. Flexor digitorum superficialis
5. Supinator	10. Flexor digitorum profundus

## A4a Life drawing, nude model and portrait

**Techniques and materials:**

Graphite pencil, colour pencil, pastels, Siberian chalk and charcoal, pen and ink, brush, sanguine and bistre chalk, watercolour etc.

**Assignment (deadlines in schedule):**

- drawing from nude model
- Drawing skeleton and plaster models
- (self) study: 'Die Gestalt des Menschen' by G. Bammes and handouts provided by the teacher.

**Learning Objectives:**

- composition, form and negative space
- Understanding
  - posture, spatial context 2D / 3D
  - proportions: frontal / lateral / ¾ view
  - simple perspectival foreshortening
  - skeleton points on the surface
  - principles of sculptural shapes (convex / concave) in relation to the anatomy.

*Competences: I - IV*

*Working method:  
Life drawing class*

*Access requirement: Non*

*Obligation to attend: In the first year students must be present at all life model classes. If the student is prevented, he/ she must communicate this in time with the teacher.*

*Contact hours: 8 hours a week*



## A4b Life drawing with emphasis on anatomical structure

### Techniques and materials:

Graphite pencil, colour pencil, pastels, Siberian chalk and charcoal, pen and ink, brush, computer

### Assignment (deadlines in schedule):

- life model drawing with emphasis of anatomical structure
- introduction dissecting room and short course anatomy of the musculoskeletal system

### Learning Objectives:

- theory:
  - size and proportion
  - thorax / shoulder
  - abdomen / pelvis
  - leg / foot
  - arm / hand
  - head / neck (extra preparation for workshop 3-D face mapping)
- Drawing studies of the relationship between skeletal system, muscle groups and external shape based on a plaster cast model of the musculoskeletal system and the skeleton.
- Drawing of projections of the skeleton and muscles in life model studies
- Introduction dissecting room
  - thorax / abdomen
  - Shoulder girdle / arm
  - Pelvis / leg

(*in vivo* and dissection room)

Competences: I - IX

### Working method:

*Life drawing class*

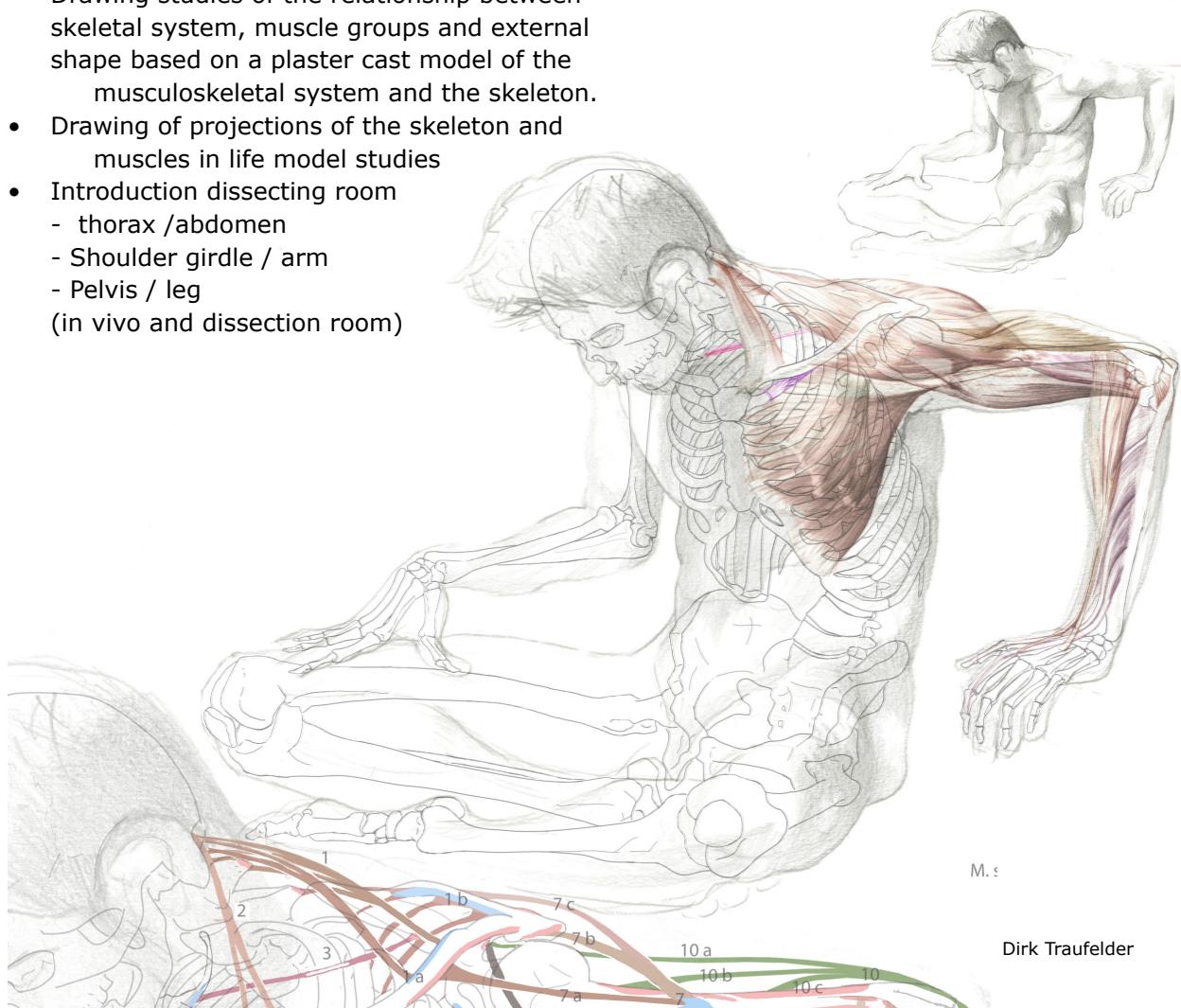
*Atelier model*

*Self study*

Access requirement: Non

*Obligation to attend: In the first year students must be present at all life model classes. If the student is prevented, he/ she must communicate this in time with the teacher.*

*Contact hours: Every day there is a teacher present and available for consultation and feedback. The contact hours are varying.*



# Animal

## Animal

The theme 'Animal' consists of five components:

1. the mammalian locomotor system
2. the animal *in vivo*
3. dissection of the laboratory rat
4. the mammalian skull
5. a second animal



Ashley Rose Sauer

## B1 The mammalian locomotor system (plaster cast)

### Techniques and materials:

Graphite pencil, Paper 200 grs 50x70 cm.

### Assignment (deadlines in schedule):

- Draw with pencil a lateral view of the locomotor system of a mammal (plaster cast dog, lion). Scale 1:1.
- Draw the skeleton into your drawing, with pen and ink on transparent paper or with the computer (adobe Illustrator).

*Competences: I - IX*

*Working method:*

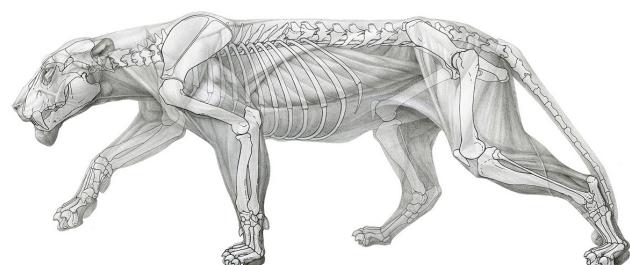
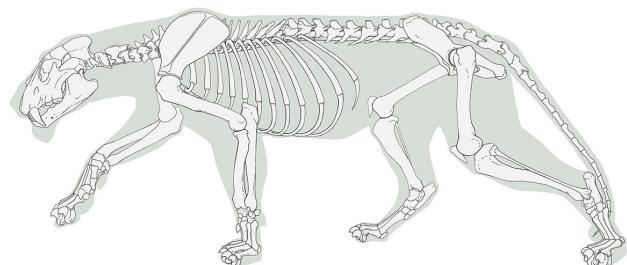
*Atelier model*

*Self study*

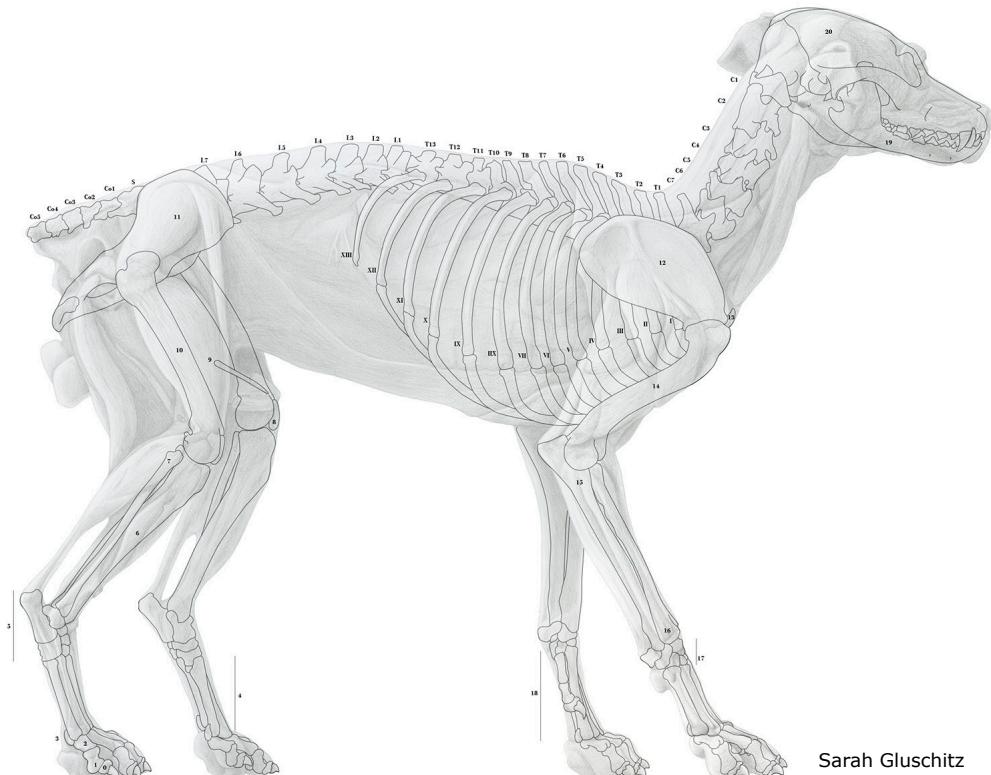
*Access requirement: Non*

*Obligation to attend: The introductions of the curriculum components are compulsory. The student manages his/ her own time after the introduction*

*Contact hours: Every day there is a teacher present and available for consultation and feedback. The contact hours are varying.*



Arisa Jantaralap



Sarah Gluschitz

## B2 Illustrating the animal in vivo

### Techniques and materials:

graphite pencil.

### Assignment (deadlines in schedule):

- Make a series of drawings/ sketches of a living animal (The species can vary depending on the availability).

*Competences: I - IV and VII - IX*

*Working method:*

*Life drawing*

*Access requirement: Non*

*Obligation to attend: Students must be present at the lectures. If the student is prevented, he/ she must communicate this in time with the instructor.*

*Contact hours: 8 hours.*



### Learning Objectives:

In the assignments as written in B1 and B2 the students explore by means of observation, measuring and drawing the relationship between the musculoskeletal system and the external form of the (lab) animals.

In assignment B1 the student practices: form and negative space, posture, proportions, perspective foreshortening and precise drawing skills (in which ratio and form are checked using a ruler/ compass tools). The student acquires anatomical knowledge about the musculoskeletal system of a mammal by exploring the relationship between the skeleton and the muscles. Superficial skeleton points are used as markers by which the skeleton is drawn onto the external form of the animal.

In assignment B2 the student practices: form and negative space, the spatial context 2D-3D, proportions, the principles of sculptural shapes, and the ability to project (imagine) the anatomy of the skeleton in a moving animal while drawing. In this section, we focus on ethology (behavioural science) of the mammal.

This assignment also serves as preparation for the comparative anatomy lab practice (B3).

Dissecting animals that you have drawn in life before gives rise to a discussion about the use of animals.

In these lessons we will discuss the ethical aspects of the use of animals in medical and biomedical research, industry and education.

## B3 Dissection of the laboratory rat

### Techniques and materials:

graphite pencil, paper, digital camera, computer.

### Assignment (deadlines in schedule):

- B3a: Dissection of the Laboratory Rat

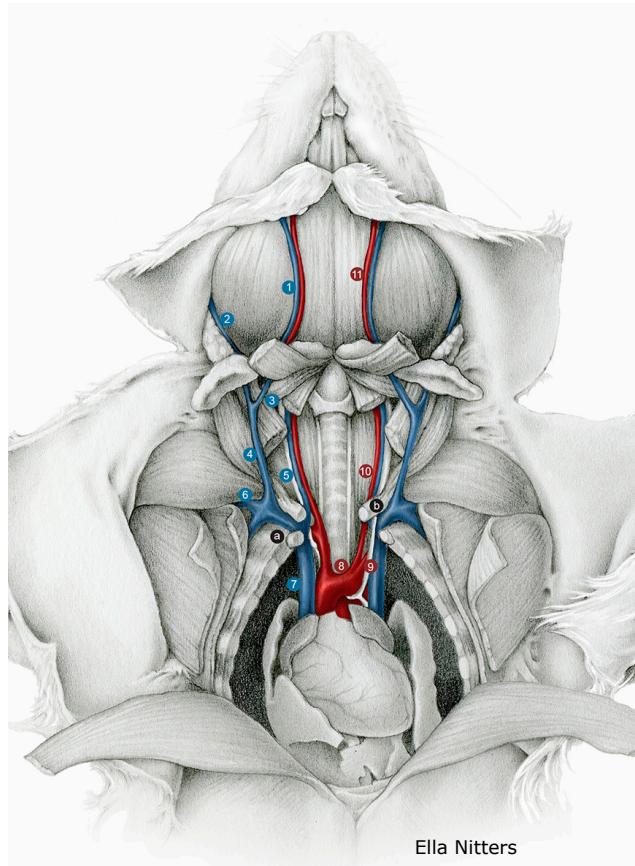
Make during dissection of the laboratory rat and after completion of the dissection classes a series of pencil drawings/ sketches of the dissection stages and anatomy systems. Scale: at least 1:1, preferably larger.

- B3b: Dissection of the Laboratory Rat, registration and final artwork

Document the dissection stages also by digital photographic recordings.

In consultation with the teachers an anatomical system or anatomical dissection is chosen from the registrations to elaborate in a final illustration(s). Text and illustration are combined in a comprehensive infographic and must be presented in a layout that could be one out of a biology book for students. Terminology (in Latin or English) should be added in a logical and aesthetic way to the educational page.

- Keep track of hours that you spend working on the final artwork.



*Competences: I - IX and XI*

### Working method:

*Part 1: Lab practice*

*Part 2: Atelier model*

*Self study*

*Access requirement: B1 and B2 achieved*

*Obligation to attend: Students must be present at all lab lectures. If the student is prevented, he/ she must communicate this in time with the instructor.*

*Contact hours: Part 1: lab practice: dissection and recording ± 40 contact hours and 40 hours of independent work (in 10 days).*

*Part 2: final artwork: every day there is a teacher present and available for consultation and feedback. The contact hours are varying.*

### Learning Objectives:

Besides acquiring dissecting skills the student practises: form and negative space, proportions, the principles of sculptural shapes (convex/ concave) and precise drawing skills (in which ratio and form are checked using a ruler/ compass tools). During dissection also the hand-eye coordination is developed and trained, which is a very important skill for a good illustrator.

The lab rat is chosen because this animal is commonly used in (medical and biomedical) research and alumni are likely to get assignments about this animal in future professional life.

During 6 lab practicals, students will gain insight into the structure and function of the following systems: digestive tract (digestive system), respiratory tract (airways), circulatory tract (heart and blood vessels), urinary tract, genital tract, nervous system, and the basic embryology is. The comparative anatomy (human / animal and animal / animal) plays an important role in these sessions.

Every student has their 'own' specimen and is responsible for it during all sessions, which means that the student gets familiar with the various preservation methods.

## B4 The mammalian skull

### Technique and material:

Graphite pencil, Schoellers Hammer 4R paper

### Assignment (deadlines in schedule):

- Draw with pencil on SH paper (graphite pencil several grades) a ventral view, as detailed as possible, of the skull a mammal (without mandibula). There are several species available. Scale: a large skull (like a horse skull) 1:1 or smaller; an average skull 1:1 and a small skull 2:1 or 3:1 or larger if necessary.
- Keep track of hours that you spend working on the total assignment and specify the activities.



Victoria Achkasova

*Competences: I - V*

*Working method:*

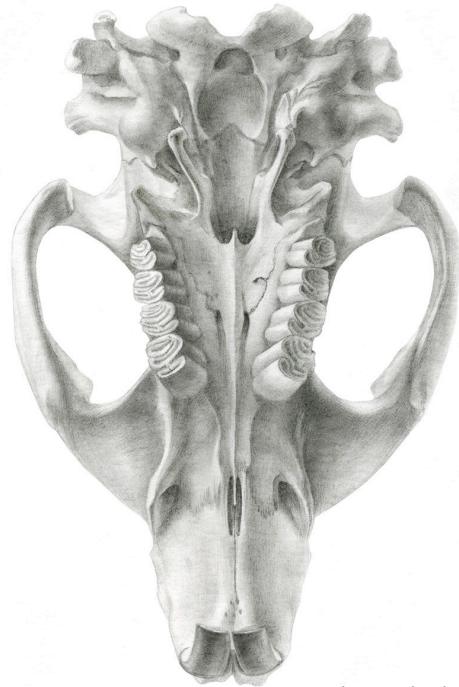
*Atelier model*

*Self study*

*Access requirement: B1 and B2 achieved*

*Obligation to attend: The introductions of the curriculum components are compulsory. The student manages his/ her own time after the introduction*

*Contact hours: Every day there is a teacher present and available for consultation and feedback. The contact hours are varying.*



Elena Kakoshina

### Learning Objectives:

In this assignment students learn how an anatomical structure can be visualised effectively and detailed in a halftone technique. In the assignment the student practises: form and negative space, proportions, the principles of sculptural shapes (convex/ concave), depth of field, perspective and precise drawing skills (in which ratio and form are checked using a ruler/ compass tools).

During the assignment, extra attention is paid to the surface texture and illumination (light and dark). Every student has their personal skull and is responsible for it during the accomplishment of the assignment. Anatomy and function of the parts of the skull are discussed as well.

Furthermore time management is crucial in this project. Concentrating for a long period on a delicate graphite drawing can be exhausting. Efficient management of time and energy by alternating between assignments helps to stay focused.

## B5 A second animal

### Techniques and material:

Graphite pencil, colour technique (free of choice), digital photography.

### Assignment (deadlines in schedule):

- The second animal starts with a presentation of your topic to the rest of the class. You will explain what you are going to dissect, what your objectives are and how you intent to visualize it.
- Record by means of photographs and drawings/sketches a number of dissection stages during the dissection (without supervision) of a second animal.
- Document the dissection stages also by digital photographic recordings.
- In consultation with the teachers (who play the role of client to whom you want to sell the illustration) an anatomical system is chosen from the registrations to elaborate in (a) final illustration(s) in a drawing medium at choice. Text and illustrations are combined in a comprehensive infographic or composition drawing and must be presented in a layout for a specific target audience. Terminology (in Latin or English) and text should be added in a logical and aesthetic way to the functional/ educational page.
- Make an estimate of the time you are going to spend on it and calculate a quote.
- Keep track of hours that you spend working on the research, sketches and final artwork. At the end of the project the prices, time and efficiency are evaluated.

### Learning Objectives:

In this assignment, students learn to dissect an animal independently and register the dissection stages using drawings and photographs. This data is then processed to produce a correct composition drawing or infographic in a drawing medium of choice.

In the preparation of the artwork as described in the assignment, acquired skills in B3 are applied practically.

Choices between stylized and realistic visualizations are made in order to get the best results in form and function. Storytelling plays an important role in this assignment.

The procedure in B5 is a simulation of professional practice. Time management and business aspects are trained.

*Competences: I – IX and XI*

### Working method:

*Part 1: Lab practice*

*Part 2: Atelier model*

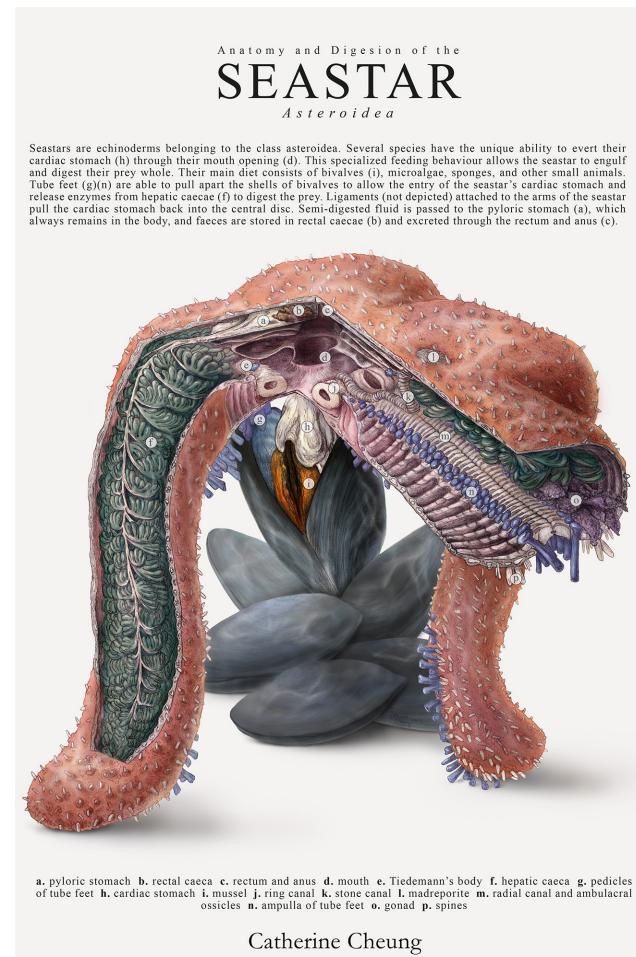
*Self study*

*Access requirement: B1 and B2 achieved*

*Obligation to attend: Students must be present at all lab lectures. If the student is prevented, he/ she must communicate this in time with the instructor.*

*Contact hours: Part 1: lab practice: dissection and recording ± 8 contact hours and 40 hours of independent work.*

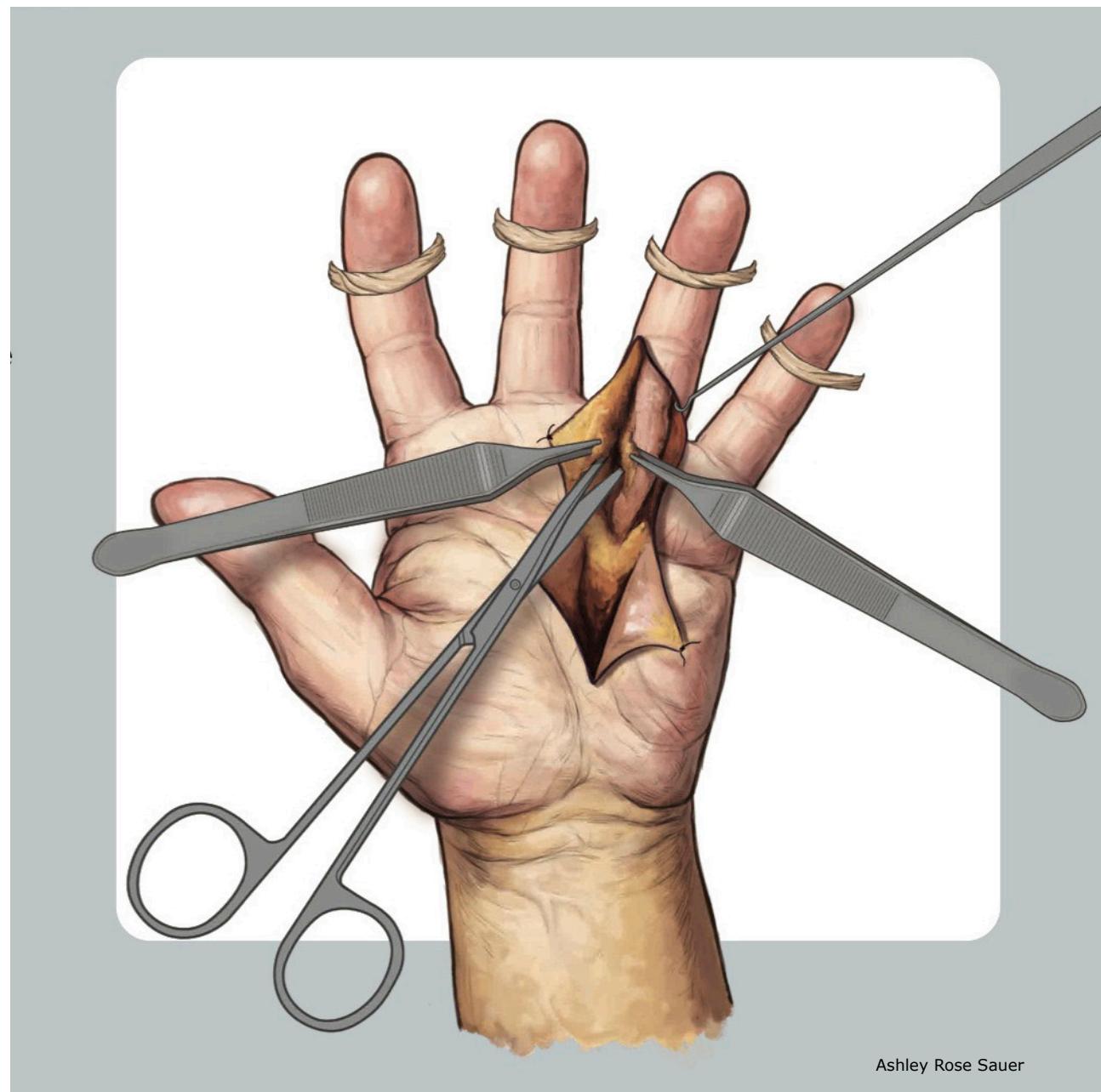
*Part 2: final artwork: Every day there is a teacher present and available for consultation and feedback. The contact hours are varying.*



## Surgery

The 'Surgery on man and animal' theme consists of four components:

1. microsurgery on the laboratory rat (instruments and hands)
2. microsurgery on the laboratory rat (experimental animal model)
3. microsurgery on the laboratory rat (surgical procedure)
4. surgery in the hospital (Maastricht University Medical Center+)



Ashley Rose Sauer

## C1 Microsurgery, instruments and hands

**Techniques and materials:**

Graphite pencil, pen and ink, several drawing templates, computer  
Pen and ink, Schoellershammer paper (Glatt)  
70x50 cm.

**Assignment (deadlines in schedule):**

C1 Handstudy and line art

- Make a series of hand studies.
- Draw the skeleton of the hand in one or two of the studies.

*Competences: I - IX*

*Working method:*

*Atelier model*

*Self study*

*Access requirement: Non*

*Obligation to attend: The introductions of the curriculum components are compulsory. The student manages his/ her own time after the introduction*

*Contact hours: Every day there is a teacher present and available for consultation and feedback. The contact hours are varying.*

**Learning Objectives:**

In this assignment, students learn line drawing techniques in which hands and instruments can be visualized effectively. By doing the assignment he/ she trains an understanding of form and negative space, proportions (frontal and ¾ views), perspective, foreshortening and precise drawing skills (in which ratio and form are checked using a ruler/ compass tools).

The sketches and drawings of the instruments are drawn into ink, where special attention is paid to the technical aspects of drawing with pen and ink and the use of various types of tools and rulers.

The student learns several methods to make a suggestion of 3-dimensionally in a line art technique. The anatomy of the hand is studied and the student draws the skeleton of the hand in one or two of the studies to understand the relationship between form and function of the hand.

The assignment in C1 serves as preparation for C2 and C3.



Victoria Achkasova

## C2 Microsurgery of the laboratory rat (experimental animal model)

### Techniques and materials:

Graphite pencil, watercolour, animal model (MD PVC-rat), instruments.

### Assignment (deadlines in schedule):

- Make a realistic visualisation in color (traditional or digital technique) (scale 1:1) of a simulated microsurgical intervention on a model of the laboratory rat using the recordings of hand positions done by a micro surgeon (slides, photographs). Gather all material you can use to make a convincing illustration (your hand studies, instrument construction drawings, registrations and photos of your rat dissections, veterinary anatomy books).

### Learning Objectives:

In this assignment, students learn drawing techniques in which hands and instruments can be visualised effectively in colour (watercolour, colour pencil). By doing the assignment he/ she trains form and negative space, proportions, perspective, foreshortening and precise drawing skills (in which ratio and form are checked using a ruler/ compass tools).

The student has to come up with solutions to the specific problems that arise when working with slides/ photos, for example the distortions caused by the lens of the camera.

The model, instead of a real rat and the fictitious surgery was chosen to avoid unnecessary use of animals.

By using the material and examples collected during the dissection classes of the laboratory rat (colour photos and drawings) the student makes a realistic picture of the abstracted animal model and the contents of the abdomen. Just like in the professional practice he/ she has to be creative to produce a good illustration with help of all available facts and examples, which are not always ideal.

In preparation for the final artwork in colour, the student makes a black/ white halftone version to determine the light. Because the student uses an imaginary light source, the high lights and shadows need to be reconstructed.

The assignment in C2 serves as a preparation for C3.

*Competences: I – VI*

*Working method:*

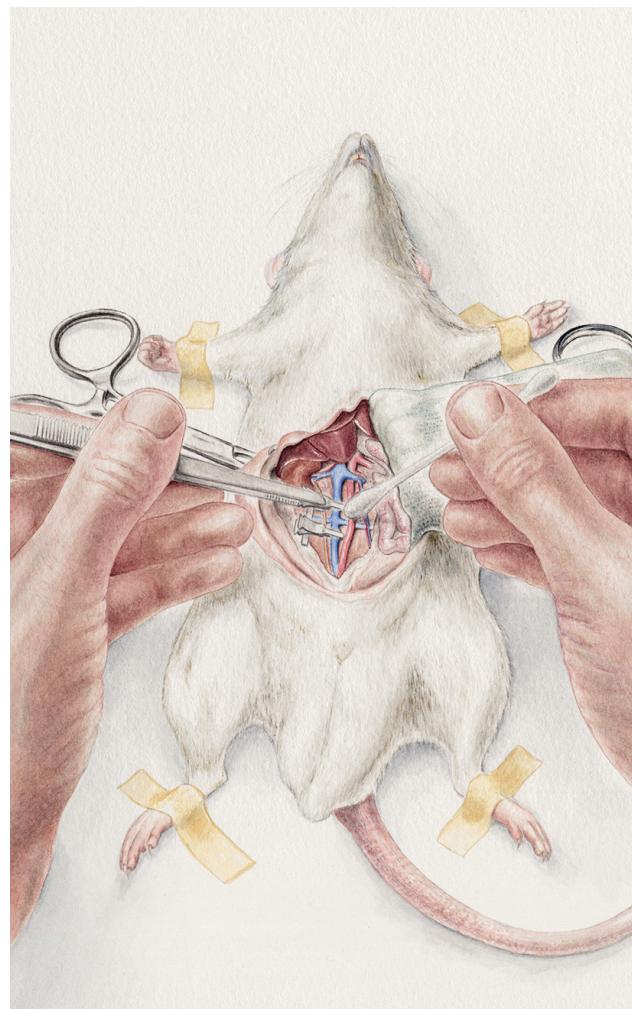
*Atelier model*

*Self study*

*Access requirement: Non*

*Obligation to attend: The introductions of the curriculum components are compulsory. The student manages his/ her own time after the introduction*

*Contact hours: Every day there is a teacher present and available for consultation and feedback. The contact hours are varying.*



Stefan Németh

## C3 Microsurgery on the laboratory rat (surgical procedure)

### Techniques and materials:

Graphite pencil, fine liners, videorecordings, photographs, computer.

### Assignment (deadlines in schedule):

- We attend a microsurgery at the Surgical Skills Centre where we analyse the microsurgical procedure and make a surgery report, followed by a illustrations list.
- Make an estimate of the time you are going to spend on it and calculate a quote.
- Train your business skills through the role-play (Making quotations, negotiating, communicating, etc.).
- Keep track of hours that you spend working on the research, sketches and final artwork. At the end of the project the prices, time and efficiency are evaluated.
- Make a series of line drawings of a microsurgical operation on the laboratory rat using your notes, sketches and recordings.
- Complete these drawings with text and prepare them on the computer for an imaginary publication.

### Learning Objectives:

In this assignment, students train a method/workflow (with all specific techniques) in which a microsurgical procedure can be visualised effectively in a small series of illustrations.

Students make an analysis of the operation together with the teacher. Based on the analysis they have to write a surgical report, and an illustration list. While making the list they have to think already how they will illustrate the procedure in a way that fits with a chosen target audience.

In creating these series of surgical illustrations students practise the skills that have been learned in C1 and applied in C2.

The assignment in C3 is an introduction to the professional practice and serves as a preparation for C4.

Business skills are practiced in a role-play (Making quotations, negotiating, communicating, etc.). The students are confronted with various cases that arise in the field while working as a freelancer. At the end, the process is evaluated.

Competences: I – XI

Working method:

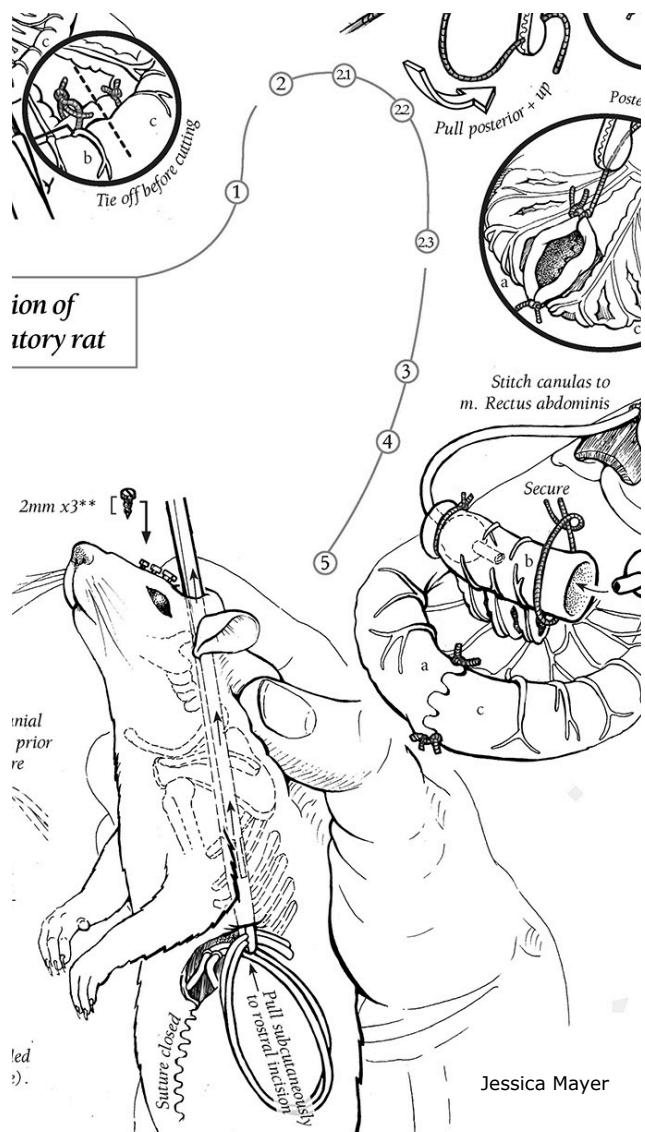
Atelier model

Self study

Access requirement: C1 and C2 achieved

Obligation to attend: The introductions of the curriculum components are compulsory. The student manages his/ her own time after the introduction

Contact hours: Every day there is a teacher present and available for consultation and feedback. The contact hours are varying.



## C4 Surgery in the hospital

**Techniques and materials:**

Graphite pencil, pen and ink, registration sketches, photography, computer.

**Assignment (deadlines in schedule):**

- Make a series of line drawings of a surgical intervention on a patient, based on sketches, photographs and other data collected by the student in the operation room.
- Prepare these drawings for printing/ publication on the computer.
- Make an estimate of the time you are going to spend on it and calculate a quote.
- Keep track of hours that you spend working on the research, sketches and final artwork. At the end of the project the prices, time and efficiency are evaluated.

**Learning Objectives:**

In this assignment, students reuse the method/ workflow (with all specific techniques) that was trained in C3, in which a surgical procedure on humans can be visualised effectively in a series of illustrations. This time the students make their own recordings and photographs of the surgical procedure in the clinic.

Preparations for attending the operation will be done independently by the student; the surgical procedures and techniques are studied in the library and on the Internet, the student is studying the topography of the surgery area using own documentation, books, atlases, specimen from the dissection room and anatomical models.

The student gets detailed instructions from the teacher on the behaviour rules (do's and don'ts) in a surgery room and discusses the way in which an operation can be captured using the most effective photography.

During surgery, the student takes notes, makes sketches and photos and gathers information that can be helpful for creating the illustrations (used instruments, peripherals, etc.). The student makes a preliminary design in pencil (or computer graphics) and discusses the plan with the teacher. In doubt the surgeon will be asked to have a look as well before the design is worked out in the final illustrations.

Communication skills with professionals from the medical field are trained during this assignment and also advising skills in order to be able

to advise the medical specialist about the best way to illustrate the scientific or medical subject. Knowledge of the basic anatomy and terminology in Latin and English is necessary to fulfil this assignment. The student should have developed this knowledge by then.

The method in C4 is a simulation of professional practice.

*Competences: I – XI*

*Working method:*

*Practical at the Academic Hospital Maastricht (Maastricht University Medical Center+):  
The students observe during a surgical procedure and make sketches, notes and photos.*

*Atelier model*

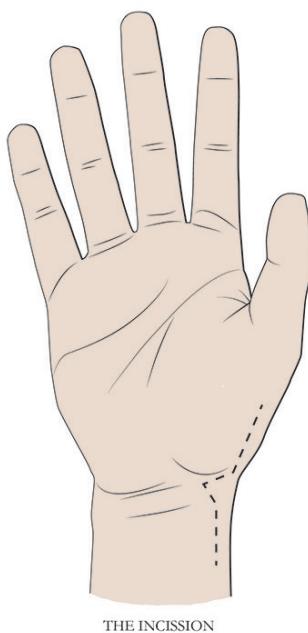
*Self study*

*Access requirement: Non*

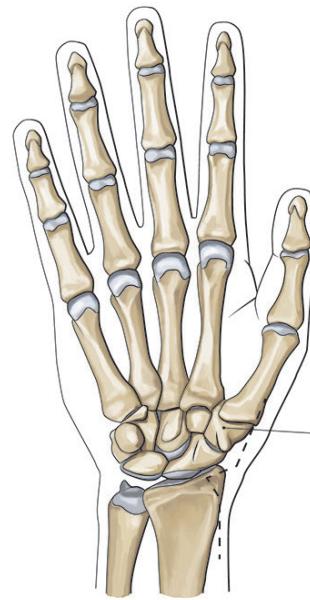
*Obligation to attend: The teacher arranges a date with the surgeon. Students must be present in time at the operating room in the hospital. If the student is prevented, he/she must communicate this in time with the teacher.*

*Contact hours: Part 1: Operation room: recording ± 4 contact hours and 40 hours of independent work.*

*Part 2: Final artwork: every day there is a teacher present and available for consultation and feedback. The contact hours are varying.*



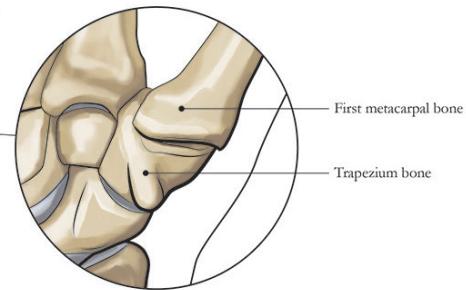
THE INCISION



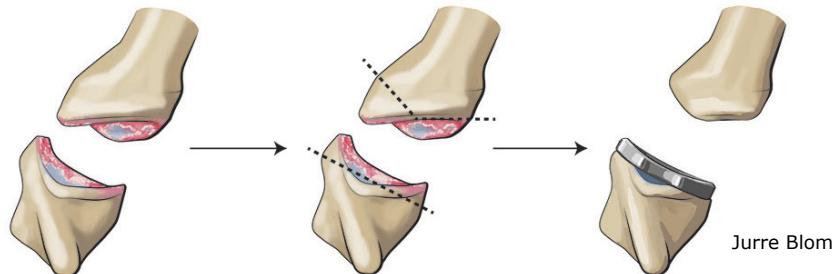
THE BONES OF THE HAND

## TRAPEZIO-METACARPAL SPACER

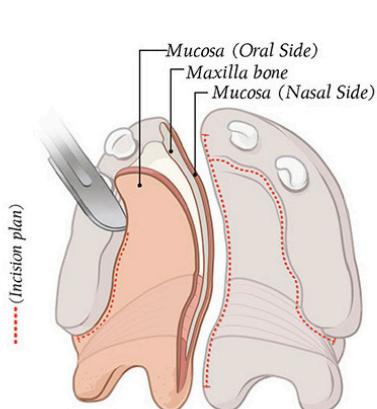
PLACING A PROSTHESES  
IN AN ARTHRITIC  
TRAPEZIOMETACARPAL JOINT



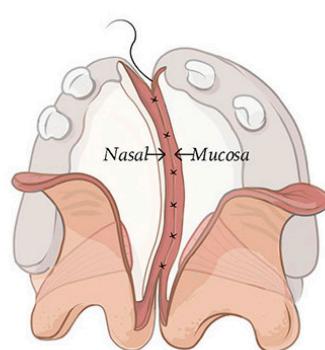
THE TRAPEZIOMETACARPAL JOINT



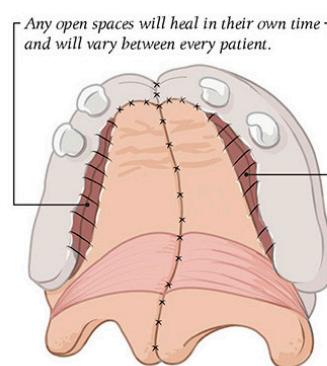
Jurre Blom



*Stage I:*  
Opening the palate to reveal the maxilla bone, nasal mucosa and palatinus muscle.



*Stage II:*  
Using dissolvable suture, the two sides of nasal mucosa are adhered



*Stage III:*  
The Oral mucosa and palatinus muscle are aligned & secured. The surgery is complete.

# Workshops and Lectures

## Workshops, guest lectures and field trips

A selection of the listed lectures and workshop and more are offered every year. Check your schedule for the scheduled workshops and lectures.

### **Guest) Lectures**

Introduction in Scientific Illustration  
History of Scientific Visualisation  
Surgery introduction  
Botanic illustration (Naturalis)  
Scientific illustration (Naturalis)  
Layout and composition

### **Workshops**

Watercolor techniques  
Cinema 4D, ZBrush (3D modelling)  
Interaction design principles  
Personal Professional Positioning training  
Botanic illustration  
Reconstruction of Soft Facial Parts

### **Field trips**

AEIMS congress  
Infographic Congress  
Radiology: CT, MRI, Ultrasound  
Hortus botanicus  
Veterinary anatomy department, Utrecht  
Archief of rare books, University Library Leiden

### **Instructions**

Adobe Illustrator Photoshop  
Adobe Illustrator Illustrator  
Adobe InDesign, thesis design  
Graphite, Line art, traditional techniques  
business management: role play, negotiation, communication, Presentation skills



## Graduation project

The The MSI program assesses the realisation of all the final qualifications at Master level by means of the graduation project. To reach the intended high standard, the program follows a strict procedure for the realization of the master thesis and the assessment of the artwork. The eight evaluation criteria used for each assignment throughout the program are also applied to this final project.

A student is admitted to the graduation project when the previous assignments have been completed at a sufficient level (grade 6 or higher). The student chooses a possible topic for the thesis and draws up a project assignment in the biomedical field in collaboration with an external expert (also called an external advisor). The visualizations that are created in the context of the graduation project must contain a relevant, contemporary, scientific topic. The student submits a written proposal of the project (the thesis proposal) to the teacher team. The assignment will lead to a graduation publication, the thesis. The publication consists of the visualization of the topic and explanatory text, which reflects on the visualization process and the visualization techniques. It includes an explanation of the need for the visualization of this specific scientific problem. Illustrating at master's level is in itself a form of research and knowledge acquisition.

During the graduation year there are three important parts that the student works on:

**1. Creating the visualisations that are requested by the external advisor**

- These are specifically based on the needs of the external advisor. (in a more or less client situation). The advisor has the final say.

**2. The artistic research and writing of the thesis based on the visualization issue**

- The thesis contains (part of) the visualisations for the external advisor and may contain additional illustrations, appropriate to the subject.

The student has the final say.

**3. The publication and exhibition**

- The thesis is professionally printed and published. Furthermore, part of the art work is exhibited in the annual graduation show of the Maastricht Institute of Arts.

Besides the visualisation an accompanying video is made of the making process.



### Topic

The topic of the graduation project is determined in consultation with the teachers. In the period prior to graduation, the student researches possible projects and searches for external experts who can supervise a project in a specific field of (bio)medical sciences. For example, medical specialists, biologists, paleontologists and authors of scientific publications. The graduation project is a practical assignment. The illustrations made during this period should be useful to the external expert. During the acquisition process, the student develops communication skills with scientists and increases his or her professional skills. The student presents a thesis proposal to the teaching team. If a student has not found a suitable project, teachers can advise the student and put the student in contact with, for example, medical specialists from the MUMC+ (Maastricht University Medical Center).

## Guidance

- For the duration of the project, one of the teachers is appointed as personal supervisor, the mentor. The mentor is chosen by mutual agreement.
- Most important is the external advisor. Depending on the chosen subject, the student seeks expertise in the Maastricht University Medical Center or at universities, clinics and other institutes elsewhere.
- The projects of all students are discussed in monthly 'graduation group discussions'. Several teachers of the team are present to talk about the progress. During these sessions, students provide peer feedback on each other's process and work.

## Preparation

At the start of the graduation period the student will make a 'thesis proposal' in consultation with his/ her mentor. In a timeline is described how the various activities can be performed with optimal efficiency during this period. The feasibility will also be described in this thesis proposal. Time management will be discussed during Graduation Group Discussion Meetings.

Preparations for the final exam project might include:

- collecting and reading literature about the chosen topic
- the collection of existing visual material about the chosen topic
- establish contacts with content expert(s).

## Effectuation

The graduation project is carried out independently and consists of three parts:

1. *Creating the requested visualizations*
2. *The artistic research and writing of the thesis*
3. *The publication and exhibition of the artwork*

*ad 1.*

When developing the visualizations, the student will have to collect information and reference material. Depending on the chosen topic, as much information as possible about the topic is collected in many different ways. Preferably first hand and not based on other people's images.

For a botanical or anatomical image (human or animal), a (self-made) anatomical specimen is the best source of information. Information can also

be obtained by attending a surgical procedure; a briefing from the advisor; literature-based research, or internet search. All visualizations are based on information collected by the student.

In order to visualize the chosen subject, a series of visualizations is made, in the widest possible variety of (drawing) techniques. The publication must show what the technical skills and professional competences of the graduate are. During both the sketch design phase and the elaboration phase of the artwork, the student has regular contact with the mentor, the external expert(s) and the other teachers.

*ad 2.*

The student already starts writing his/her thesis during the project. The text is written on the basis of the research question that the student has introduced in his thesis proposal. In many cases, the subject of the thesis is based on a scientific issue with its own research. Nevertheless, the research described in the thesis is the (artistic) research of the student, in which, for example, the effectiveness of illustration and communication for a certain target group is investigated. In order to be able to explain the choices, the student must thoroughly understand the scientific problem and to some extent also describe the relevant scientific research in the text. Ultimately, this text will be a report of the overall project describing what has been investigated, what choices have been made in the illustration process and describing the use of the artwork with its scientific, clinical or social relevance.



## Exhibition and Examination

*ad 3.*

The publication is digitally designed in Adobe InDesign and made print-ready.

The design is done on the basis of a by the program provided template. This includes the inside of the publication and the cover.

During the production process of the publication, the student maintains contact with the printer. The final digital version of the publication should be ready at least two weeks before the oral exam to give the members of the committee of examiners the opportunity to prepare themselves well and assess it. A professionally printed publication will be finished before the graduation ceremony.

### Graduation exhibition

Part of the artwork is exhibited in the annual graduation show of the Maastricht Institute of Arts. Besides the visualisation an accompanying video is made of the making process.

### Assessment of the graduation project

Examination of the graduation project consists of a number of assessment steps.

- The thesis (text and visualizations) is submitted to the reading committee (a selection of teachers from the teacher team) for approval. The final graphic design can be done later. The deadline of submitting the thesis is set in the timetable that is provided to the student at the start of the second year.

- The reading committee will return the thesis with a combined written feedback, within three working weeks.

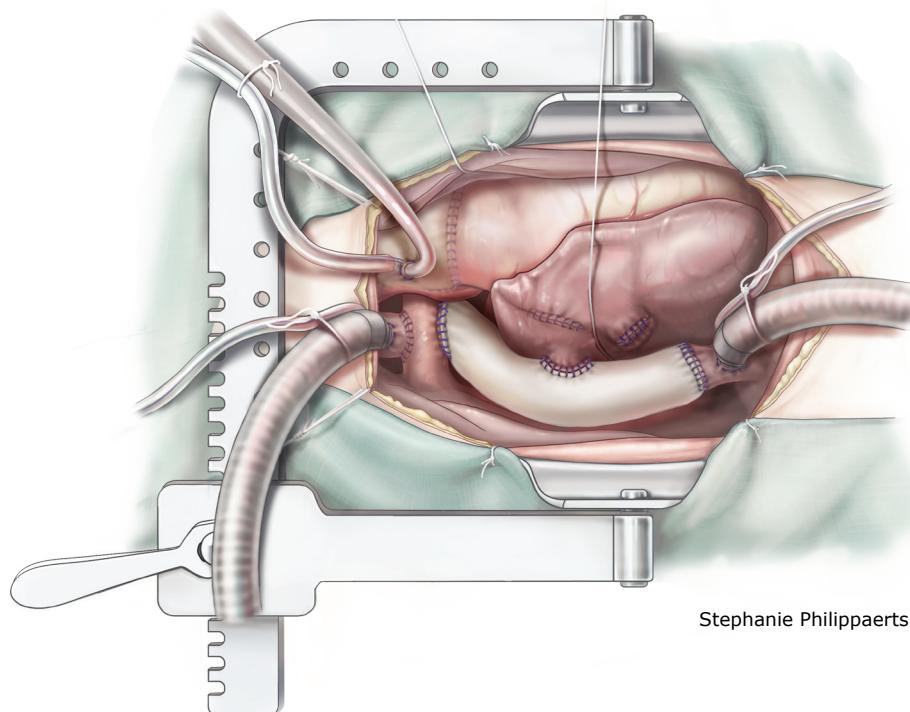
A GO/ NO-GO decision is made by the full teacher team. When the thesis is approved, the student is given permission to publish the thesis and to present and defend it for the Committee of Examiners of the final exam. If the work is not sufficient the student receives a no-go, the thesis project can be submitted again within the same academic year, before September.

- The final oral examination: The Committee of Examiners consists of: the chairman, the mentor, and a delegation of the teaching. The external expert will be present at the examination for advice in the assessment of the project and thesis.

### Degree certificates

The designation (summa) cum laude is only given by unanimous decision of the entire committee and on the condition that:

- *The minimal grade of the graduation project is an '8,5' to be awarded with 'Cum laude' or the minimal grade of the graduation project is an '9,5' to be awarded with 'Summa cum laude'*
- *The student has achieved 90 EC within two years and has started graduation with the maximum delay of six months.*



Stephanie Philippaerts