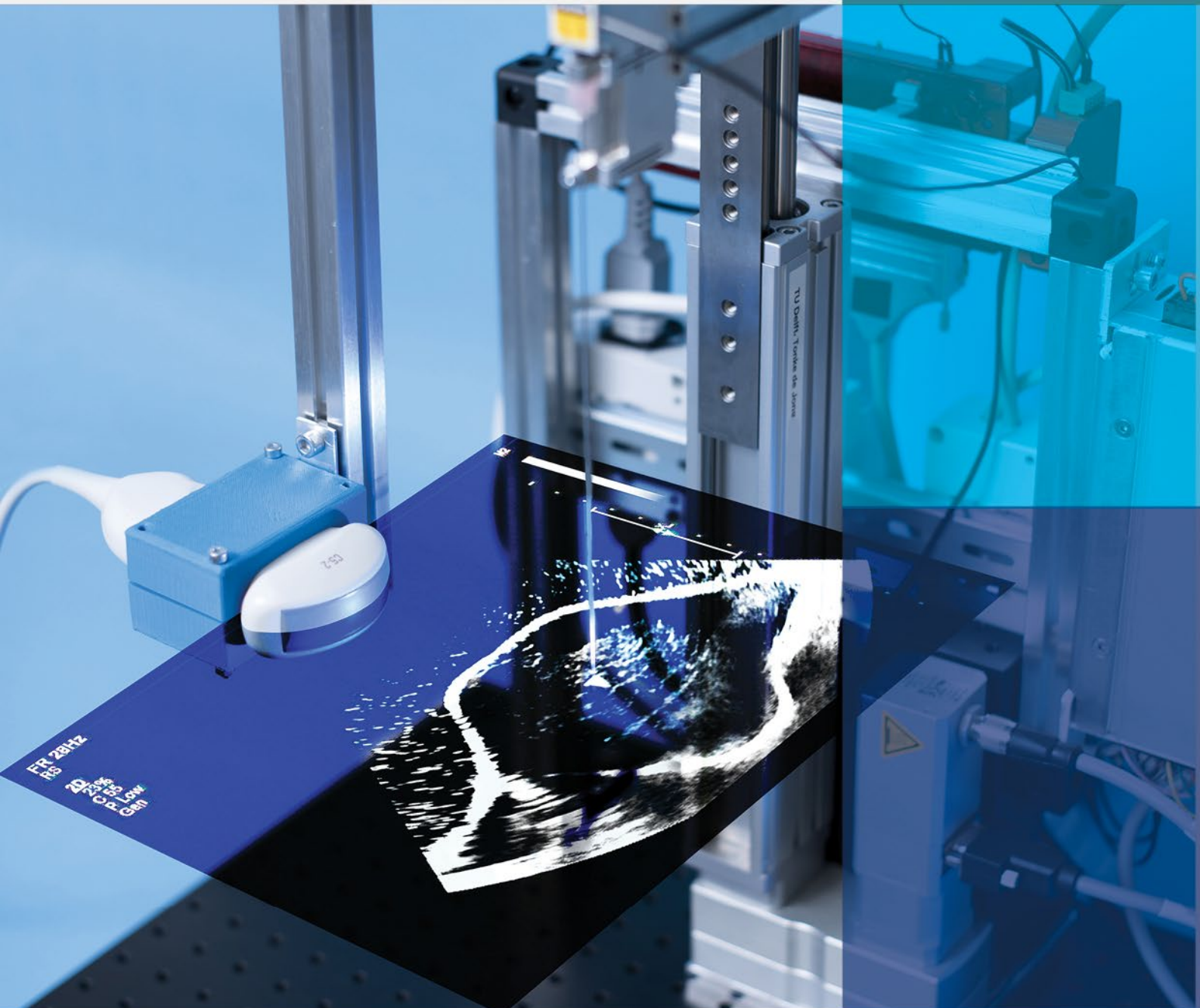


Template and Information for Submitting Assignments Clinical Technological Research (KTO)

Final project for the BSc
Clinical Technology

Course Year
2024-2025



**Universiteit
Leiden**
The Netherlands

TU Delft Delft
University of
Technology

**Erasmus
University
Rotterdam**

Erasmus

'Clinical Technological Research' (KTO) – final project for the Bachelor Clinical Technology (Directly submit assignment? Use form on last page.)

Early February 2025 the new round of the final projects for the BSc Clinical Technology will start! This is a great opportunity to let one or more teams of **four students** (Bachelor Clinical Technology) **contribute together to your project** with no less than **56 EC (European credit points = 1568 hours)**. In this final thesis project for their BSc, the Clinical Technological Research project (abbreviated to KTO from the Dutch "Klinisch Technologisch Onderzoek"), will have to show that they can successfully conduct a project in their field of work with a scientific approach.

WHAT IS THE KTO SCHEDULE?

Ten weeks after choosing your assignment, your students team will explain in a research proposal how they plan to fulfil your assignment. Next, the students will work **4 weeks part-time** (4 x 5.5 EC) on a **systematics literature review** concerning your assignment. Using these findings, they will write a detailed research plan, which they will execute and report in the last **6 weeks fulltime** (4 x 8.5 EC). **Friday 27 June 2025** all students will present their results during a festive KTO finals-symposium!

WHAT KIND OF ASSIGNMENTS CAN BE SUBMITTED?

- **Research assignments** with a clinical-technological question or goal
- **Design assignments** for a clinical-technological medical device or experimental setup
- **Health Technology Assessments** in the broadest sense

Assignments may concern, for example, devices, instruments, prostheses, safety, logistics ,software, treatment plans, calibration, acquisition, et cetera.

WHAT DO WE ASK?

- The small effort of submitting an assignment via the attached form (last page).
- Some meetings with your students team in preparation of the project execution weeks.
- Supervision of your students team during the project execution weeks.
- Timely delivery of your assessment of your students team at two occasions.
- Presence of at least one of the supervisors at the KTO finals-symposium.

WHAT DO YOU GET?

- A team of four clinical technologists in training, contributing to your project with 56 EC.
- A systematic literature review on a topic relevant to your project.
- A design, setup, data, analysis, recommendation, plan, depending on your assignment.
- A DVD/USB-stick with all of your team's generated results, including source data and source files.

We are looking forward to receiving your KTO assignment and to together achieving great results! Thank you very much in advance on behalf of the KTO coordination team!

Dr. ir. Arjo Loeve

Coordinator MSc Biomedical Engineering & KTO BSc Clinical Technology

Delft University of Technology

Faculty of Mechanical (ME), Department of BioMechanical Engineering

Room F-0-050, Mekelweg 2, 2628 CD Delft, Nederland

T. +31 (0) 15 2782977 || www.bmeche.tudelft.nl || a.j.loeve@tudelft.nl

Please only use the provided form and no own documents for submitting assignments by sending the digitally completed form to dr.ir. Arjo Loeve via a.j.loeve@tudelft.nl. Please feel to call us (015-2782977) or e-mail your questions.

Timeline KTO

Figure 1 shows how the KTO is structured for the students. The KTO takes place during the **2025 calendar weeks 7 to 26**. For each week it is indicated what plenary activities are scheduled (such as “Introductory lectures” and “Feedback sessions”) and which deadlines (such as “Project plan” and “Report”) the students will have to meet. Meetings with the supervisors can be planned around these plenary activities. Students are obliged to attend all plenary activities.

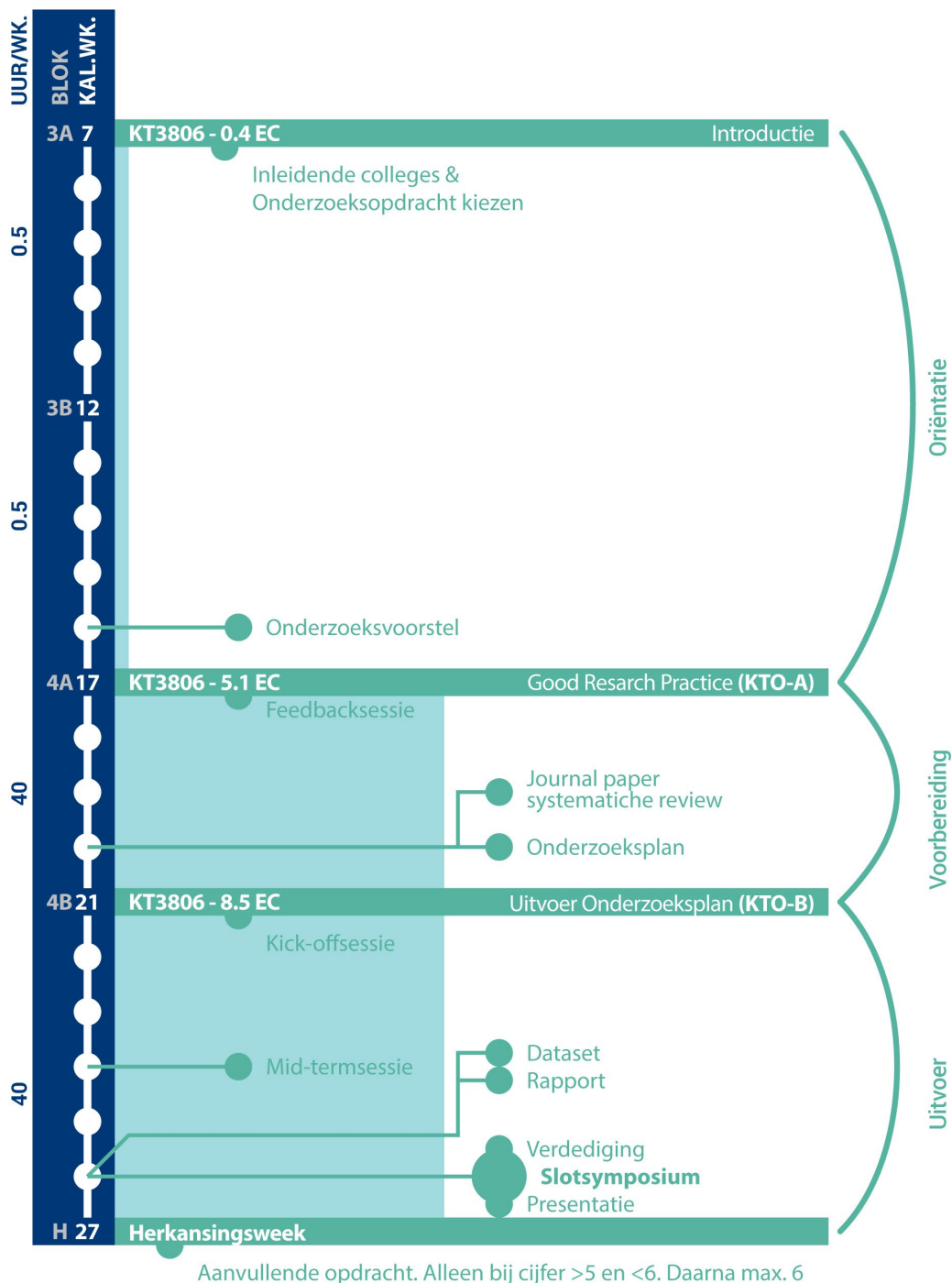


Figure 1: Timeline KTO (Course code KT3805) for students. “KAL.WK.” = ‘calendar week’. “UUR/WK.” number of **hours spent per week per student** on the KTO-project.

Additional terms & conditions

SUITABILITY OF ASSIGNMENTS

A committee of clinicians and technologists will assess the submitted KTO-assignments: **1)** to assure that these offer the necessary opportunities for a suitable and feasible assessment of the educational end-terms and **2)** to reduce the possibility that your expectations of the project results will not be met.

If the committee decides that your assignment has potential, but in its submitted form does not suit KTO yet, we will contact you to discuss how the assignment can be adapted to fit KTO or to provide suggestions for submitting your assignment to other project courses or other programmes.

If your proposed assignment concerns research with human subjects beyond a pilot study with minimal risk, we can only approve your assignment if you indicate that (M)ETC-approval has been obtained or if you can provide a valid confirmation of a non-WMO status of the proposed work.

During the project the students are expected to (with you and us as coaches and you as content expert) shape their own project and achieve sufficient profoundness, quality and delimitation.

ASSESSMENT MOMENTS

We kindly ask you to judge the quality you students team's work at two instances, based on consensus within your supervisory team. For that we will provide you with a form with simple assessment rubrics in which you will mark a few scores between 1 and 5. To enable you to schedule some time for the assessment, we provided a table below with the dates on which we will send you the materials to be assessed, the accompanying rubrics, and the deadline at which we would like you to return the assessment to us. We will also send timely reminders.

For the assessment of the final report you will provide input to an independent jury during a jury session at the final symposium.

To be assessed	Your receival date	Assessment deadline
Mid-term progress	TUE 3 June 2025 18:00h	TUE 10 June 2025 13:00h
Final report	MON 23 June 2025 13:00h	During the final symposium: FRI 27 June 2025, schedule will be provided later
Project dataset and process		THU 26 June 2025 15:00h

Who is the BSc student Clinical Technology (CT)?

ADVANCED SCANS. CUSTOM 3D-PRINTED ORGANS. MEDICAL TECHNOLOGY HAS BECOME AN INTEGRAL PART OF HEALTHCARE. INNOVATIVE TREATMENTS AND THE EVER INCREASING AMOUNT OF TECHNOLOGY IN THE HOSPITAL REQUIRE A NEW KIND OF MEDICAL PROFESSIONAL. SOMEONE WITH MEDICAL AND TECHNICAL KNOWLEDGE, WHO BRIDGES THE GAP BETWEEN TECHNOLOGY AND PATIENT: THE CLINICAL TECHNOLOGIST.

At the start of their KTO-project the third year BSc student CT:

- has gathered two and a half year of **clinical knowledge** on, amongst others, physiological systems, biology, anatomy and clinical skills,
- has developed into a **professionally** acting and cooperating group member,
- masters Matlab-**programming skills**,
- can **analyze and model medical and technical systems**,
- has some experience in **developing technological solutions for medical problems** and building prototypes,
- can **analyze and place clinical-technological questions and developments** in a broad societal, ethical, economical, practical, clinical and technological context,



These future certified clinical-technologists will work in a medical team to aid in optimal diagnosis and treatment of the patient, at a hospital's technical department or in a clinical research group. The clinical-technologist eases the introduction of technological healthcare innovations and is a key player in the healthcare of the future.

Instructions for submitting a 'Clinical Technological Research' (KTO) assignment – final project for the BSc Clinical Technology

RESEARCH FOCUS: Research/Design/Health Technology Assessment (choose most fitting)

1. BACKGROUND

Concisely describe the background of the problem or question. Your students group will contact you in calendar week 7 or 8 to gain information and for further analysis of the problems/questions/goals. Please indicate relevance and context and try to enthuse students for your assignment.

2. GOAL/QUESTION FOR LITERATURE REVIEW

Provide a specific goal or current question on which students can focus their literature review. If you do not have any preference, please suggest some topics to the students here, in which case they will choose a subject themselves and decide what is of value for their research project. The process of the literature review will also be coached by our Clinical Technology lecturers team to support you and the students. This means you should have to spend barely any supervision time for this part of the students' work.

3. GOAL/QUESTION FOR RESEARCH PROJECT

During the 5 project execution weeks the students will be mainly concerned with realizing their project plan. Please describe what goal/question should be aimed for/answered. **Expectations should be feasible and realistic. The students' (well planned) project should be realizable within these weeks.**

4. DESIRED END RESULT

All students groups must deliver:

- a scientific paper reporting the results of their literature review,
- a research report that allows you and successive students to reproduce the results of the project,
- and a project dataset on DVD or USB-stick or via a data transfer with all source files of figures and texts, measurement data, written software code, conducted analyses, etc.

As the client/supervisor you can request the student for additional deliverables within the project. Perhaps you would like to see a working prototype or perhaps a proof-of-concept would suffice. Do the students have to develop an experimental setup or do they also have to conduct the experiment? By knowing your expectations, we can take care together of a proper balance between available time, your wishes, our educational regulations and the abilities of the students.

5. FACILITIES

Please try to estimate as well as possible what facilities your students team will need (rooms, support, equipment, software, materials) for your assignment. In case of human subject research, indicate whether (M)ETC approval or a formal non-WMO declaration is available. Unfortunately, because of the time risk, we cannot accept any assignments for which this process still has to be gone through. It is crucial that you and us together have a proper idea of the necessities, so missing means can still be ordered or arranged timely by you. If anything is needed, but not yet available, please indicate that as well. We will try to find a solution with you and see if we can support your project with the facilities available at our Clinical Technology department.

6. CONTACT INFORMATION OF CLIENTS AND SUPERVISORS

One of the supervisors also acts as the client and final responsible. **As such, you commit to timely providing the necessary assessments, information, materials, facilities and means. Furthermore, you or one of the co-supervisors (on behalf of the client) will attend the presentation and defense of your students group(s) at the KTO finals-symposium and the successive jury session.** Supervision teams consisting of both clinical and technical backgrounds are preferred, but this is no demand. Unfortunately, students or interns cannot be accepted as supervisors or clients.

Please only use the provided form and no own documents for submitting assignments by sending the digitally completed form to dr.ir. Arjo Loeve via a.j.loeve@tudelft.nl. Please feel to call us (015-2782977) or e-mail your questions.

Title:

Please use the Dutch template for submission and use this document only for the translation.

RESEARCH FOCUS: Research Design Health Technology Assessment

1. BACKGROUND

2. GOAL/QUESTION FOR LITERATURE REVIEW

3. GOAL/QUESTION FOR RESEARCH PROJECT

4. DESIRED END RESULTS

5. FACILITIES

6. CONTACT INFORMATION OF CLIENTS AND SUPERVISORS

The client has read this document "Template and Information for Submitting Assignments Clinical Technological Research (KTO)" and agrees to commit to the accompanying obligations.