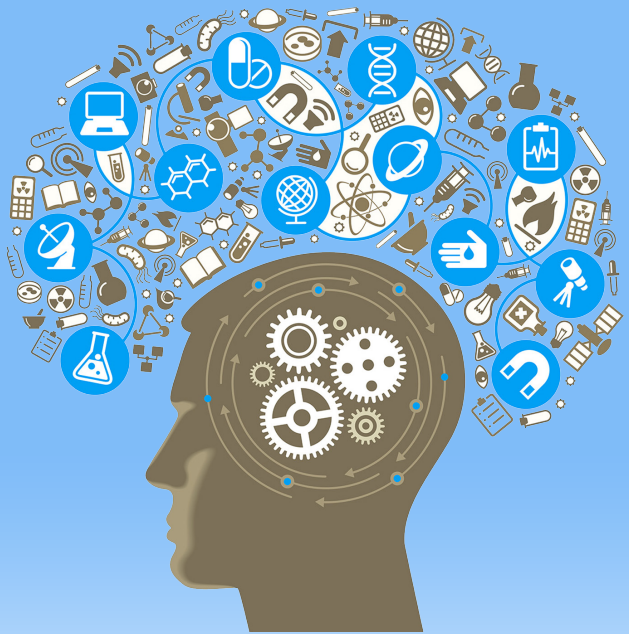
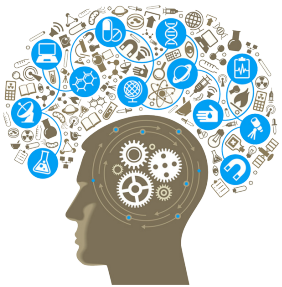


Research Honours

UNIVERSITY OF TWENTE.



Research Honours

A Master Honours Course

Academic year 2014 - 2015

University of Twente

Introduction

Dear Reader,

In front of you lies a booklet about the MSc Research Honours programme, an individually tailored extra-curricular track offered by the University of Twente (UT) for students who have ambition to become a researcher. Through extra courses, trainings and meetings, the program helps excellent UT master students that are in their graduation phase to develop knowledge and skills in the area of academic research. For more information about deadlines, contact information and the selection and admission, please visit http://www.utwente.nl/excellentie/en/research-honours/.

This book was designed to give well-performing students insight in the first edition of the Research Honours program, that finished in June 2015. We hope that the content of this book can assist them in case they are considering to participate in coming editions of the program, or simply want to learn more about it.

To achieve this, we first introduce to you the students that participated in the 2014-2015 edition. This gives you an idea of the variety of students that can enroll in the program. The book continues with information about all activities that were undertaken during the first edition, together with impressions of the students who participated.

We hope that you'll enjoy reading this book, and that it can provide you with information to help you make your choice regarding participation in the Research Honours program. It is a unique track that allows you to get that extra bit of knowledge and experience out of your master study, so it's absolutely worth considering. And what would be a better start of this, than reading this book?

Good luck!

Contents

Introducing the participants

Pinak Samal

I am Pinak Samal, currently a second year Masters student in Biomedical Engineering (specialization Molecular, Cell and Tissue Engineering). I am working on my Masters thesis, where I study the effects on Amniotic Fluid Stem Cells when cocultured with mature pancreatic cells. I am conducting my thesis under the guidance of Prof. Dr. Marcel Karperien, in the Developmental Bioengineering group. I will finish by August 2015.

Francesca Rivello

I am Francesca Rivello, I am 22 years old and I am doing my Master in Nanotechnology at the University of Twente. I am currently at the second year of my master, finishing in June my Master thesis project and starting in July my internship in Philips in Eindhoven. I am planning to graduate after my internship in December 2015.
Personally I chose to follow the Research Master Honour programme to understand better what it means doing a PhD and being a researcher. I wanted to gain some useful tools to become a researcher which are not learnt in my regular Master degree.

Bastiaan Bruinsma

Having finished my Master's last June, I have worked for the past six months as a researcher for the Public Administration department on behalf of the TGS bridging grant. I was offered the opportunity to join in the Master Honours programme and knowing the benefits of such a programme I joined. At the end of the programme, I expect to finish a proposal for PhD funding and this will be my main deliverable for the Master Honours. As such, I expect to finish at the end of June, given that I stick to my planning.

Belinda Brandwacht

Hi all, my name is Belinda Brandwacht and currently I am a first years Master student Biomedical Engineering. In a couple weeks I will start with my internship, to which I really look forward to. Since I am in the first year of my master, I do an adapted version of the programme. I choose to follow the programme because I am convinced that I want to do a PhD after my study. By following the programme I hope to be prepared as well as possible when I start with my PhD.

Martijn Driesprong

In 2006, I started the study Civil Engineering at University of Twente. I quickly discovered that my primary interest is in efficient and expedient structuring of processes. This interest was further fuelled by different extra-curricular activities where I also experienced the importance of financial underpinnings of decisions. This experience led to a shift to the Financial Engineering and Management and Business Administration masters. I believe the methodology courses in

these programs are less in-depth and while I always had the interest in a PhD program, I was triggered by Research Honours programme. End of this academic year, I intend to finalise the defend the master theses.

Peter Binipom Mpuan

I am Peter Binipom Mpuan, born and raised in Ghana. I am simple but serious with great curiosity and a strong desire for knowledge acquisition and sharing. When I am not studying, I like to organize and participate in events, or volunteer for development organizations. My favourite dish is "fufu" and I enjoy playing football in my leisure time. I study Master Philosophy of Science, Technology and Society, and currently at the end of my second year.

I enrolled in the RH program innorder to gain additional research training which will enhance my research skills and preparation for PhD research. I also believed that the RH programme offered an opportunity for me to spend my extra time on acquiring knowledge that is relevant to my study and useful for my future career.

I will have the apotheosis on June 11 and then defend my thesis on June 25th. Therefore, I should finish the programme by June 25th, 2015.

Sjoukje Schoustra

My name is Sjoukje Schoustra. I did a bachelor in Industrial Design Engineering and continued with a master in Biomedical Engineering. At the time of writing, I just handed in my master thesis! So hopefully I will be finished in a few days. I started with the Research Honours programme because I already knew I want to continue with a PhD and wanted to prepare myself and broaden my profile. I plan to finish the Research Honours programme around August.

Maaike Koenrades

My name is Maaike Koenrades, 26 years old. I studied Technical Medicine and graduated November last year. I was invited to join the research honors program when I got nominated for the TGS award 2015. It was a nice opportunity to broaden my knowledge of research in academia. As a TGS award candidate I received the 'TGS 6 month bridging grant'. This currently enables me to obtain additional financing for a full-PhD while performing research at the MIRA institute within the Robotics and Mechatronics group in collaboration with the Medisch Spectrum Twente.

Oskar Eikenbroek

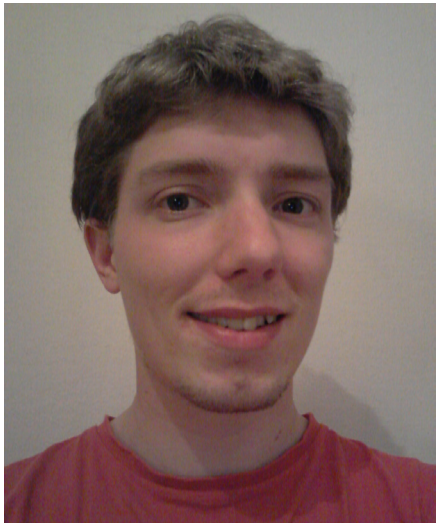
My name is Oskar Eikenbroek, I am currently a second year graduate student enrolled in both the Civil Engineering & Management and Applied Mathematics programme. I chose to participate in the Research Honours programme as I am eager to learn new things and this track gives me the opportunity to further develop my research skills, not only in e.g. research management and writing research proposals, but also in communicating to non-experts. Goal is to finish the Honours programme and to graduate for both studies next academic year. After that, I hope to pursue a career in academic research.

Wytse Oortwijn

My name is Wytse Oortwijn. I am currently a third year Computer Science student at the Formal Methods and Tools research group on the University of Twente. At the time of writing, I am working on my Master's Thesis, which I hope to finish in two weeks. After having completed my Masters project I am going to work as a PhD student at the University of Twente, also on the FMT research group. I enjoyed the Masters Research Honours programme. The workshops helped me, not only with completing my Masters project, but they also gave me a good start in my career as a researcher.

Bob Steenhuis

I'm Bob Steenhuis, 24 years old, and I'm currently doing my thesis research for the Master Science education and communication. The Research Honours program finished a while before my graduation, so many of the skills and knowledge are still applicable to my research. Furthermore, I enrolled mainly because of my doubts of becoming a PhD researcher. I'm having trouble making up my mind regarding choosing an academic career, and the Research Honours program allowed me to have a "sneek peek" into the life of a researcher. Also, the broad array of students (and thus motivations to possibly pursue a PhD), inspired me to think about my own motivations. In addition, I felt that the program offered a final opportunity to get everything out of my master study, so just being able to follow it was a motivation to do it for me as well.



Vincent Bloemen

I am Vincent Bloemen, I managed to complete my master in Computer Science just before the end of the Honours program. I chose to take part in the Research Honours program mainly to broaden my view of science. During my time of study, I never got a clear picture of other fields of research. In this program, I got to learn excellent students from very diverse fields. This makes it all the more interesting to see how everyone struggles with practically the same problems.

I will pursue a PhD shortly after the Honours program finishes. Here, I will continue on the subject of my master thesis, with all the extra knowledge that I gained from this program.

Activities

Throughout the program, we participated in a number of workshops and courses. One goal of these workshops is to improve the academic writing style alongside other practicalities. Another goal is to learn more about the structure of science, how it is perceived, and aspects regarding publishing.

We address each workshop in the following parts: we first introduce the contents after which some reflections from the students are provided.

Experiences

Kickoff

The Research Honours programme was opened with an informal, two day "Kick-off" workshop. The main objectives were getting to know the other participants and learn about contents of the program. To ensure a social atmosphere, three meals were included between the workshops, providing a lot of time to talk to fellow students and teachers.

Within the two days, introductions were given about several parts of the program. Connecting with the teachers was done by "speeddates". Besides chatting in between, students were introduced to each other by asking them to bring an object of choice as part of the kick-off. This object had to "represent your motivation to do research".

Pinak:
I think it was an important part of the program. I came to know about the fellow participants of the program and also what was expected from us during the program. The fact that it was highly interactive made it easy to make contact with everyone.

Francesca:
It was a great experience to meet the whole group in an informal way. I felt this activity was useful to socialize with the other participants of the programme without having too much input information. I especially found interesting the 10 min interviews with the different supervisors.

Belinda:
I really liked meeting all the other students who participate in the programme in a 'playful' way. At first I was a little bit nervous, because I was afraid I would not fit in or I was

not good enough for the programme. However, it soon became clear that this was not the case. The part I liked the most about the kick-off was the speed dates with the supervisors. It was nice to hear all the different views of them on good qualities for a PhD'er and their own background stories.

Sjoukje:
The kick-off was a really nice activity, mainly to get to know each other. I remember that during the reflection dinner on the second day, almost everyone mentioned the nice group and the great atmosphere. Introductions on two important activities ('Advanced Science Communication' and 'Science Research Writing') in the programme provided a good understanding of what to expect.

Oskar:
The kick-off was exciting. It was the first time meeting the other Honours students and there was a good atmosphere. The introductory games and workshops were a good start to get an impression of the programme and to learn the other participants.

Funding, competences and writing

The second activity consisted of a workshop series with dinner provided between the workshops. Three topics were discussed. Starting with a workshop on the fundamentals of competitive proposal writing. This session laid out a general approach, with a focus on interpreting evaluation criteria and how to continue building work towards a competitive CV. The next part focused on individual learning contracts, in which personal competences were developed. A plan was made to achieve and evaluate the goals. The day ended with "using reading to develop writing". Students had a close look at scientific publications, resulting in a useful framework of linguistic and structural features common to scientific writing in English.

Belinda:
Beforehand, I was especially interested in the part about writing, since I had the feeling I could make most progress in this aspect. Although the workshops were mostly just lectures about the subjects, most of them were really inspiring. It was very nice to hear which competences are important for a PhD'er and how to get funding for your research. Furthermore, the workshop writing really met my expectations.

Bob:
For this day, no preparation of finalizing assignment was required. The first workshop, about applying for funding, was very interactive though. It was nice to not only listen, but also actively do something during the workshop. It was also nice that this workshop was given by Telma Esteves, who directly supports researchers at the UT in grant proposal design, preparation and submission. She is therefore very knowledgeable in this regard and makes the workshop extra informative and useful.

Vincent:
I found this workshop a nice combination of important aspects in the complete programme. I particularly liked the part about structuring a PhD proposal, mostly because there are a lot of aspects that I previously did not consider important. It was also nice to reflect on our own goals in the workshop. We discussed our learning goals by describing these as "smart" plans and thereby helping each other to more clearly state the problems to be addressed in the remainder of the Research Honours programme.

Wytse
The workshop started with a general overview over the Honours programme. During the workshop, we formulated learning goals in a SMART way. By doing that, we made our learning goals explicit, which made it easier to work on them. After that, we focused on writing research proposals. I now know the importance of 'selling' research ideas when writing a proposal, because of the fierce competition. I also learned the procedure of funding itself and got tips to improve my CV. The second workshop was about reading to improve scientific writing. We looked at several scientific publications and focused mainly on structure and writing style. This gave the basis to the Scientific Reserach Writing course. Both workshops were very interesting and provided a number of good tips and tricks.

Advanced Science Communication

Advanced Science Communication is a 5 EC course that consisted of eight meetings, lead by Hedwich te Molder. In this course, the students were taught to identify the core theoretical concepts in the field of science and technology communication. More and more, scientific experts are required to pay attention to the ways in which their research is going to be communicated to and with the 'outside world'.

However, scientific experts and consumer-citizens often have different appreciations of science and technology, and this affects their interactions. What is the nature of these differences and what are the implications for the communication between experts and consumer-citizens? How do people deal with complex information regarding technological risks? What is the role of emotions? How should experts and expert organizations establish or maintain trustworthiness?

These insights were applied to improve communication practices in the field of science and technology communication. In addition to an interactive class teaching, the students also made individual assignments that consisted of analyzing particular communication problems and providing a strategy to improve the communication.

Pinak:

I think it was a highly informative course. Especially for me, I learnt to look at scientific topics not just as a researcher but also from a completely different perspective- that of a consumer/ beneficiary. This not only broadened my view for my own research, but will also help me with critically thinking about my research in the future.

Francesca:

We had to do quite some work for this activity: four assignments and previous to every lesson literature to read. We had also to search information in blogs which was a totally new thing for me, since I am used to reading scientific papers.

Martijn:
In the Advanced Science Communication course we developed a better understanding of the role of science and scientific research in today's society. Especially the issues of trust and trustworthiness were very useful, not only for academics but for life in general. Furthermore, the insights in the importance of perceptions on academic facts raised awareness on the importance of societal perceptions and public debate over scientific publications. With the connections of academic literature to practical situations, the course gave me more background on contemporary discussions and (political) framing issues.

Sjoukje:
I'm in a technical field, which is really something different than Advanced Science Communication. The lectures were interactive, which I think was a good thing. Three relatively short assignments and one final assignment (essay) had to be written. It took me quite a lot of time, especially the final essay. The course was useful, because it makes you think about aspects of doing science that you tend to not consider, but which can have a big impact in translation from your research to society.

Research Management

Research Management was a three-day workshop that consisted of two lecturing days including lunch and a final presentation session by the students. The purpose of this course was to teach students what science is about, how it works, and how it is organized. Researchers need to be able to identify processes they are involved in.

These processes include, but are not limited to, the production and transfer of knowledge. In addition, the course provided students a sense for the wider environment in which they operate, how they and their groups are evaluated and funded. The course provided students with an idea of how to manage their research process and their careers in science.

Three lecturers, Hans Vossensteyn, Hanneke Becht and Hans Roosendaal, discussed nine important aspects of science. In addition to be taught about the vast amount of information in a brief time period, the students were also required to apply these concepts to their own research, by analyzing and presenting how particular aspects of Research Management affected their own work.

Francesca:
I think a lot of concepts were useful to start a career as a researcher. In fact, thanks to this activity I could learn what the most important journals in my field are, where I should try to publish, how to search for funding and how researchers are evaluated. I felt that the workshop was useful (mostly the presentation we had to prepare), however, I think it could be shortened or more focused on the topics of interest. Some parts of the activity were not so much interesting for me whereas about others I would have liked to know more.

Bastiaan:
Having never really thought of how to manage my whole research and actually taking every opportunity as it presented itself, it seems a small miracle I am still able to cope with my work. Probably this is due to my over-

concerned supervisor who takes care of a lot of these issues. From now on, however, I think I can handle more of it myself. I even started to actually write appointments down in my agenda for a starter.

Peter:
The Research Management workshop was a hands-on, intense and engaging one. All aspects of my mental and physical faculties were stretched in a way that tested my own readiness for the PhD experience. Having successfully completed this course means a lot to me, by transforming my imaginations of how to manage research into some actual experience. I found the snap presentations and mini-defence of research topics extremely relevant because, not only did I test my communication skills to an audience of diverse backgrounds, but also built my aptitude in developing a meaningful path from the start to the end of a research project.

Oskar:
What was particularly interesting about the Research Management workshop was the lecture concerning management structures of universities. It gave insight in dilemmas of universities, departments and research groups who try to distinguish themselves from others but also to perform on the highest level.

Wytse:
The Research Management workshop provided information, tips, and tricks in managing a research project or career. The workshop explained the project management cycle, ways of publishing, performance indicators, and different kinds of funding. Some parts of the workshop were perhaps a bit obvious, for example the parts on project management. There were also parts that were very helpful, for example the parts on publishing and performance indicators. I learned what a Hirsch index is, learned how publishing works in detail, learned how to find other scientific work by using different kinds of search systems, and learned how the performance of researchers are measured. These things are very useful to know, especially in the initial stage in a carreer as researcher. The workshop also included the structure of the current scientific system, which was also very interesting. I finished the workshop by giving a presentation on the way I manage my project. This gave me the chance to apply the workshop to my own project management.

Scientific Research Writing

The course Science research writing was given over 4 evening workshops, which all focused on practical tips and hints in writing about your research. They were given by Hetty Bennink, and were highly interactive with many hand-on exercises. The sessions can be divided in three major subjects: tables, figures and the data commentary, literature reviews and abstracts and titles. The focus was in all cases about how to construct the specific sections of an article/report, do's and don'ts and how different fields of research can differ in this regard.

Pinak:
I found the course interesting because it was modeled like a workshop, and required active participation from the students. I learnt a lot about writing skills, and what to include/exclude while writing proposal or paper.

Bastiaan:
By far the most interesting class of the programme. Not only informative, but also immensely practical and directly useable to improve my papers. Especially the part that focussed on giving a good description of data helped not only to improve my paper, but made the data look better than it actually was in the first place.

Peter:
I took the Science Research Writing course over the peak period of writing my own master thesis. This course was very collaborative and I realised great value in my discussions with colleagues and the lecturer on important points to note in writing. In addition, it has been very valuable to me in drafting my research paper which is going to be assessed as deliverable for my participation in the research honours programme.

Sjoukje:
Really useful (and fun) course! A lot of practical information and tips. In me, it created awareness on how you are expected to write in research, on papers as well as proposals. Earlier I wrote intuitively, and now I can consciously make choices, for example about tenses and reference words. What I really liked during the

lectures was the alternation between theory and performing tasks. This way I could easily keep my attention for three hours.

Vincent:
This workshop has helped me a lot in understanding how to correctly structure academic texts. While I initially thought that my writing skills were decent, I was impressed with the amount that I managed to learn from the workshop. The workshop helped me to focus more on particular aspects while writing, for instance which tense to use and how to criticize related work in a polite manner.

Wytse:
The Research writing workshops was perhaps the workshop I enjoyed most. I was interested in improving my writing (which was also one of my goals). In this workshop, I learned a lot of useful tips and tricks to actually improve my writing. For example, I learned how to strengthen and weaken claims or statements in multiple ways, such as by using different tenses or writing actively instead of passively. I also learned how to write and structure powerful abstracts and titles and the importance of them. Because of the large number of articles published, researchers are very selective in the papers they read.

By using a strong title and a powerful abstract, the chance that researchers find, read, and even cite the paper increases. I learned different ways to refer to literature, and good ways to structure a scientific article itself. During my Masters Thesis I wrote a scientific article myself, and this workshop really helped me.

How to write a world class paper:

This workshop was optional, and accessible for both Research Honours students and current PhD students. As the hardly concealing title suggests, this workshop focused on knowing the best way to structure your scientific paper, identify the most appropriate journal, and understand the peer review process, which are critical to getting your work published. The workshop started off with a lunch, followed by two lectures.

The first was given by Petra de Weerd-Nederhof, Editor of Creativity and Innovation Management. She focused on publishing empirical and conceptual research, in management and social sciences. The second lecture was given by Alfred Stein, Editor-in-chief for Spatial Statistics and Elaine Ommen Kloeke, publisher environmental science, both from Elsevier. They talked about how to publish and review in a top journal.

Sjoukje:
The topics on the practical sides of publishing were interesting. How do you submit a paper, what is important and how does the process of submitting, reviewing and publishing work? Since I have not published so far, this was interesting information for me.

Maaike:
A highly popular workshop amongst PhD students. In this 2-hour lecture session both editorial and writer views were discussed. It was good to realize what questions come to mind when an editor or reviewer reviews a paper. I also appreciated the advice on how to write the different parts of an article and especially in what order. This knowledge will be beneficial when I submit my first paper the coming months.

Bob:
Very practical topics and tips for every researcher. Super hands-on, this is what is looked at when publishing. Many examples of how it should be, many examples of how it should not be. Within the latter were quite some surprises: in publishing, things go wrong in ways you can't imagine…

TGS workshops scientific integrity and the context of you PhD research

The Scientific Integrity workshop consisted of one afternoon and it is held at four times during the year. The workshop was given by professor Peter-Paul Verbeek and was aimed at starting and prospective PhD students. Peter-Paul taught the students about plagiarism and the ethical impact of research. The workshop was highly interactive and ended with an interview session in which a few students pitched their research in the style of "De Wereld Draait Door".

The workshop "The Context of Your PhD Research" was given by professor Hans Roosendaal. This workshop served as an introduction to the Research Management workshop for the Research Honours students. In this workshop, science was discussed from a broader perspective. It addressed the values and norms for a scientist (a scientist should for instance not hold any interests regarding the results of his/her work) and how to deal with uncertainties, while also covering various other aspects.

Belinda:
Beforehand I already heard great stories about the speaker, Peter-Paul Verbeek. I was really curious about this workshop, because I always find it difficult to make sure I do not plagiarize in my reports. The workshop itself was okay, but afterwards I found it difficult to apply the things we learnt to writing an report.

Peter:
Already, ethics is an aspect in social science and humanities research that sees no compromise at all! What this course did was to highlight, and with concrete examples, illustrate the essence of integrity in research. The examples of persons who have been humiliated for academic dishonesty not only put "the fear of the lord" in me, but also keep me conscious of the fact that every researcher – and for that matter me as a future researcher – deserve what is due them.

Maaike:
This workshop was part of the 'Introductory PhD workshop' in March. I found it useful that starting

PhD students also participated this day. Mostly to be able to share thoughts on doing and experiencing science. In the workshop 'scientific integrity' many straightforward issues were discussed , however it was good to be notified about available trust persons at the university of Twente.

Oskar:
Scientific Integrity was, luckily, not only about how to perform decent research but was more an interactive session with the participants. Rather than coming up with examples, students had the possibility to ask questions considering moments when they thought integrity was at stake. An accessible but instructive talk.

Creative Thinking

Creative Thinking consisted of one evening and was perhaps somewhat different from the other workshops. Nelleke van Adrichem-Rotteveel and Wander Kenter taught the students about different methods to solve a problem. A number of different techniques for doing this were presented, which could be classified to either diverge or converge the creative thinking process. This theory was also put into practice; the students tried to solve their own problems (in a group) by applying the newly-learned techniqes.

Francesca:
Creative thinking was a nice workshop to discover your thinking limits. In fact, I enjoyed to learn in an informal way that every answer to a question can be and there is not right and wrong in creativity. In the workshop some games were also present to get to know each other better.

Martijn:
Thinking out of the box – or as the trainer Wander put it "don't think out of the box, burn the box" – is an important skill for researchers as it allows you to generate different potential solutions to research problems. It was very useful to discuss and experience the divergent and convergent processes of new idea creation and assess their value for the problems at hand.

Vincent:
Beforehand, I did not know what to expect from this workshop, afterwards I am actually still puzzled by it. This is because of the completely illogical techniques that we applied, in combination with the creative (thus successful) results.

I liked one in particular in which - in order to solve the problem - we had to think of a random word. Then, we wrote the first thing that we thought of while reading this word. After doing this for a while, we ended up with a sequence that actually contained some helpful solutions.

Presentation Skills and Science Slam

The workshops presentation skills and science slam were given together, starting in the afternoon with a presentation about science communication. Central topic was the changing relationship between science, technology and society, and how you, as a researcher, have a role in this from a communication perspective. This also included practical skills: what presentation skills are needed in this role?

Students were asked to prepare a presentation beforehand, that could be improved using the tips from the workshop. The evening finished off with a science slam: students presented their research in a 10 minute presentation meant for a non-expert audience. The focus was on presenting current science to a diverse audience in an entertaining way. Personal feedback on several aspects of the presentation was provided by the audience (students) and a supervisor.

Peter:
This workshop was the first time I presented my thesis to a group of people with diverse backgrounds. It was especially challenging to make concepts understandable, however, I had a good measure of how to make my final thesis presentation excellent.

Martijn:
Presentation skills are useful for any facet in life. The practical approach to tailoring your message to a specific audience with the Science Slam was very interesting as it both allowed us to practice and evaluate our presentation skills and it showed me the research topics of fellow Research Honours participants in an attractive way.

Individual activities

Besides the obligatory, general activities, all participants in the Research Honours program were given the opportunity to select another activity. This included trainings or (series of) workshops with a focus on a specific aspect or competence that the students wanted to work on, as was taken up in their individual learning contract. Underneath you will find some examples of this part of the Research Honours program, and how this was appreciated.

Bastiaan:
I joined a course on Presentation skills, which was probably one of the most interesting, and useful courses I have ever joined. Not only was I confronted with several taped recording of me presenting, being told to specifically look at the hands or feet of someone during a presentation gives you a great idea of how important your posture and overall look is. While I have never before spent such an amount of time designing a presentation, the time spent was well worth it, and I am sure it did help during the defence of my PhD proposal at the funding agency.

Martijn:
For the individual elements of the program, I followed a workshop on data management. The workshop was centred around practical assignments. During the day workshop we practiced with different elements of a data management plan and explored different data archives and repositories. With the assignment after the workshop day I focused on a data management plan for my master thesis. It was very enlightening to practice with a familiar project and useful to consider data issues beyond the project scope (e.g. archiving).

Vincent and Bob:
We participated in the 2 day workshop called "Analytic storytelling". It was given by Arnoud Bom, employee of an external company that specialized in getting your research minded message across. After a small preparation assignment, we learned how to adjust to an audience in the first workshop, and also how to structure a story so

it becomes interesting and clear. During the first day, we also looked at the stories of other participants, which was particularly useful. Both because other people look at yours (you gain new insights from this) and because you look at how other people do it. In between, we were allowed to work on the story of our own research using the tips from the first day. The second day focused on concreteness and visualization, and on the improvements we made.

We enjoyed the Analytic storytelling very much, both because it was fun and very useful. It was perhaps even the most useful workshop in the entire programme. Improvements of our stories were very striking and we could already apply tips and tricks during the workshops of Research Honours that followed after Analytic storytelling.

Final assignment & coaching

As a deliverable for the Research Honours program, the students either had to write a PhD proposal or a research article. Some of those that wrote a PhD proposal also took part in the TGS Award. This is a competition for excellent UT MSc students with the ambition to pursue a PhD trajectory at the University of Twente.

A written proposal for this had to be submitted and the students will present this shortly after the Research Honours programme finishes. Hetty Bennink provided individual coaching sessions to aid in writing the article/proposal. She supported the writing process and helped improving the structure, vocabulary, grammar, and style.

Peter:
My paper is based my master thesis research. I argue for the need to transition from an instrumental view of technology to a co-shaping view of technology in development theory and practice. There is a dominant view of technology as the "driver" of development in the theory and practice of development. However, this view is in question in contemporary philosophy of technology because it does not reflect the very intricate relationships that exist between technology and human beings. My paper introduces the concept of technoformation which is rooted in technological mediation theory and explains human-technology relationships in communal contexts.
I discussed the structure of the paper, fitness of composition, grammar, and comprehension with Hetty. These are important because I need to make my piece understandable to a wider audience. Also, I get the

opportunity to reflect on my own writing which is good for me to organize my thoughts.

Francesca:
My final product was a paper. The topic of the paper is related to my Master thesis project on detection of hypermethylated DNA as a marker to sense cancer (in particular bladder cancer) at an early stage.

Inexpensive, high throughput, mass producible, easily operated point of care devices are of high demand in biosensing field. State-of-the-art in biosensing field depends mostly on polymerase chain reaction (PCR) and other non-electrical techniques for deoxyribonucleic acid (DNA) sequencing and detection. On the other hand, molecular electronics is a fast growing branch in the electronics world due to its inexpensive, high throughput, mass producible easily operated devices. Moreover, molecular electronics has the potential to scale electronic devices down to the nanometer scale with a huge variety of suitable molecules for different applications. Thus the combination of molecular electronics in the biosensing field can be promising. In this article capabilities of molecular electronics in the field of biosensing have been explored.

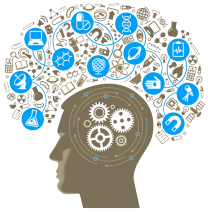
The fabricated device is based on immobilizing and metallizing hypermethylated-DNA (hmDNA) along nanogaps across the noble metal electrodes on silicon substrate and measuring the conduction through it. hmDNA serves as marker for different cancer types making it interesting in early stage cancer detection.

For the moment I had only one meeting with Hetty, but it was really useful to improve my personal writing style. In particular she helped me to shorten my sentences to acquire a better readability.

Vincent:
My final product was a research proposal. My proposal was titled "Correctness and Efficiency of Multi-Core Graph Algorithms". In simple terms I propose to improve the reliability of software by performing manually intensive verification procedures (proving correctness) by a computer. My initial proposal was far from readable by a non-expert, and thanks to Hetty I was able to see that as well. She helped me a lot in terms of structuring and improving my sentences to make them flow better. While there are still plenty of things to further improve on, I am satisfied with the end-product (an I hope that the jury thinks the same).

Bastiaan:
My proposal concerns the design for a comprehensive evaluation of voting advice applications that are used during the elections to match voters with parties. This was finished somewhere in March on paper, but had to be presented in June, which took an extra bit of preparation. Hetty helped me to spot the complicated and convulsive bits of text that I had seen too often to notice. This helped me to get rid of quite a lot of words, which was especially useful considering the quite stringent word limit. In addition, Hetty helped me with a conference paper, which had several sentences running over ten lines or more, and which we reshaped so that they are actually readable. The advices were on streamlining my text, for which I hope the future reader will be thankful.

Oskar:
For the final product, I am planning to write a research article about equity in optimal traffic routing. Where some route guidance strategies try to reach a social optimal traffic state, this system optimum may be unequitable as some drivers are routed onto longer routes than others. In absence of guidance users choose selfish, resulting into a perfectly equitable but overall worse performing traffic state. The research article evaluates guidance strategies which try to reach the system optimum. These strategies are evaluated on equity and, thus, on possible practical implementation.



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