

Taylor Vision



A New Generation



About us

Board

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Michiel Zult - Internal Affairs
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Edition

First Semester Edition

History

Taylor is the study association related to the department Precision and Microsystems Engineering of DelftUniversity of Technology. The association was founded in 1988 to enhance the study experience of the students. The Taylor Foundation, in its legal form, was subsequently founded in 1992, making it an official organ in the TU Delft. During this time, the department changed its name from “Production Engineering” to the PME you are all familiar with.

In contrast to what many people think, Taylor is not named after the famous mathematician known for the Taylor expansion. It is named after the mechanical engineer Frederick Winslow Taylor, who was active in production engineering and industrial efficiency.

The logo of Taylor was inspired by the tip of an Atomic Force Microscope, an instrument that requires technology from all the divisions of the department.

Taylor aims enhances the study experience of the students by: trying to improve the relation between the students and the department staff, bringing the students in contact with the industry, providing the department with student feedback about courses and, last but not least, organizing recreational



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From the board

Dear reader,

After already 4 to 5 months of hard work I present to you: the first Taylor Vision from the 18/19 board! As opposed to the last Vision that was mainly focused on the Taylor Trip to California, this issue will cover everything that is happening or has happened in the department and in the Taylor association.

This year is a very special year for our master track: while in the past years the number of first year's students was always around 50-60, numbers have risen by 1.5-fold in 2018! This means that everything can be bigger and more can be organized. Some say it's a bubble, but prospects are looking good from the Master event in November, where many future master students were keen to ask questions to Just, Ron, Eveline and us! The sudden rise in magnitude was especially apparent in the introduction week, where the department put a lot of effort in getting everything to run smoothly with so many attendees, at which they did a very good job. We got a beautiful opportunity to present ourselves as the new Taylor board and got to know a lot of new people at the reception on PME square: the official start of the year. Looking back on all that came after, I think we did a lot of wonderful things this semester with a lot of people interested, which will all be reported extensively in the following pages, and we ended the year perfectly rocking an ode to PME at the Christmas Event.

'This semester', yes: things have passed us rapidly and we are already actively looking forward to the second semester. We are currently very busy with some very big events, all new ideas about which you will hear soon enough, and of course a lot of exciting lunch lectures and excursions. Lastly, after semester 2 Taylor will be off to explore the foreign high-tech engineering world!

Reflecting on my first few months as chairman of Taylor I have had so many nice and exciting experiences, which were mostly thanks to the works of past Taylor boards and both the variety and expertise that our department is known for, which makes the industry very eager to collaborate with us and get the students acquainted with and excited for the environment they might be working in soon, but most importantly my fellow board members who have done all they could so far to keep things rolling. We enjoy being part of PME and we can't wait for the coming months filled with events!

Enjoy the Vision,

Maurits van den Hurk





Upcoming Activities

WARNING!

This message contains a high dosage of fun, informative and career-boosting activities organized by Taylor. Attending these activities can cause side effects such as: extreme happiness, increased love for Taylor, addiction, study delay, new friendships, obtaining a job and becoming an overall EindBaas. Readers discretion advised.

So up till now we have had some great activities but the best stuff is yet to come. Here is an overview, you're welcome.

- Week of 11 feb: Taylor reception!! + Philips lunch lecture
- Week of 18 feb: Ace lunch lecture. + Phyton intro lab
- Week of 25 feb: Denso network drinks + Lunch Lecture JPE
- Week of 11 march: Taylor reception!! + TMC lunch lecture
- 19 march: Taylor/YIN activity. I mean, this is gonna be huge! If you can only attend one activity in Q3, this is definitely the one! Trust me.
- 26 march: ZIE event organized by Holland Instrumentation.

I know it's a lot, but I can honestly say that attending these activities really helps you figuring out what you want to do with your thesis and your career after PME. See you there!

Meindert Ras – External Affairs





Recent graduates

The following students have recently graduated from PME, congratulations to all!



Kimberly Tio, specialisation: MNE

Wettability-controlled permeability of porous PDMS membranes for drug delivery in the brain

Stefhan van der Kemp, specialisation: MSD

Design of a compact wearable arm support utilizing shape optimized shell mechanisms

Vincent Tedjawirja, specialisation: MSD

Development of a low-cost radial bearing system

Erdi Akyüz, specialisation: MSD

Reset control for vibration isolation

Yusuf Salman Haryadi, specialisation: MSD

Tuning a novel reset element through describing function and HOSIDF analysis

Bob van Haren, specialisation: MSD

Design of the future bird repelling laser aiming device; a 2DOF laser aiming solution

Maarten de Jager, specialisation: MSD

Increasing the flexibility of a sliding shoe sorter by designing an individual actuated shoes-carrier system with local intelligence





Recent graduates

Jelle Boots, specialisation: MSD
Operational range of a ferrofluid pocket bearing

Laura Peeperkorn, specialisation: SOM
Towards a neutrino trap. Design, optimization, realization and characterization of a fiber laser hydrophone

Koen Markestein, specialisation: DMN
Finite element based analysis and validation for nonlinear structural dynamics

Irene Marsman, specialisation: DMN
Ice-induced vibrations of wind turbines with a jacket support structure

Korné Sweers, specialisation: MSD
Measuring plastic deformation of silicon as a result of thermal oxidation

Saurabh Sontakke, specialisation: MSD
Resonant hair clipper

Marc de Graaf, specialisation: MSD
A new concept in bearing technology: Magnetorheological texturing

Richard Pleeing, specialisation: MNE
Polymer nano manufacturing of a biomimicking surface used for kidney stone crystallization studies

Yannick Janssens, specialisation: SOM
Computational efficient robustness analysis of aircraft component distortion accounting for stochastic pre-stressed stock material in reductive manufacturing processes

Laura Dijkink, specialisation: DMN
Mechanics of wrinkled graphene membranes

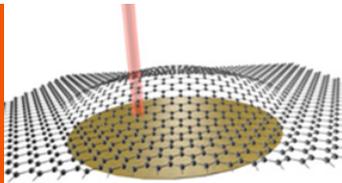
Justin Smid, specialisation: DMN
Nonlinear damping in graphene nanodrum resonators



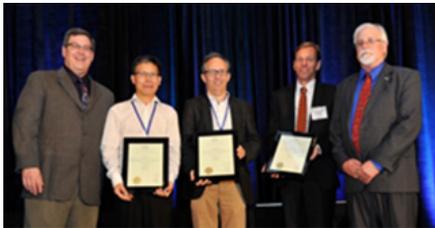


PME News

Farbod received the prestigious European Research Council (ERC) starting grant for his project ENIGMA that aims at exploring and exploiting nonlinear dynamic phenomena in graphene nanomechanical systems.



Just Herder was Co-Chair of ASME IDETC Conference in Quebec, 1200 participants, 757 accepted papers.



Richard Norte has had his article, Platform for measurements of the Casimir force between two superconductors, published in the Scientific American. Norte and his colleagues developed a microchip that held two microscopic aluminum-coated plates that were cooled almost to absolute zero so that they became superconducting. One plate was attached to a movable mirror, and a laser was fired at that mirror. If the plates moved because of a gravitational Casimir effect, the frequency of light reflecting off the mirror would measurably shift. As detailed online July 20 in Physical Review Letters, the scientists failed to see any gravitational Casimir effect.





PME News

3DSS-manufacturing lab

Although the subjects in our department are generally really small, PME's vision is quite the opposite. At the start of this year, the PME board (so not the Taylor board) made an investment plan to create a 3DSS (3-dimensional small-scale) manufacturing lab, comprising of many, many high-tech machines that can either fabricate or inspect components. This creates opportunities for even more prototyping and measurements than we currently have, and will be available to all research departments of the 3mE faculty. The newly bought machines are the following:

Fabrication	Function
Nanoscribe	Microscale rapid 3d-printer with extreme high precision
FemtoFiber	"2½D" laser cutter from meso to nano scale
Microwave plasma CVD	Manufacturing of electrically conductive B-doped diamond (BDD)
Characterization	Function
Keyence microscope	3D surface profiling using optics
Femtotool	Force/displacement measurements in 3D on nano scale (both force and displacement)
Lynceetec	Dynamic measurements in 3D at max 25MHz with nm height resolution

There are many more machines yet to be acquired in the coming year, so that the project is concluded before the end of 2019 and we'll have flying cars by summer 2020.

Maurits van den Hurk



Activities

Lunch Lecture: PM

On the 18th of September, the first lunch lecture was held by PM in lecture hall D. The presentation was kicked off by Mathys te Wierik, a former Mechanical Engineering and PME student. Mathys introduced us to the company PM, a high precision bearing manufacturer. PM operates from a high-tech facility in Dedemsvaart with the ability to produce 24/7 automatically. PM mainly focuses on linear bearings with a clearance of only 2 μ m. PM also makes other high-tech innovations with the implementation of their bearings.

After Mathys introduced PM bearings, Robert Mooijman (also a former PME student) talked about his work at PME. Robert works as a R&D engineer, designing a high-tech positioning system. The positioning system has 5 degrees of freedom and brings its own challenges due to vibrations. Robert showed that he could apply the knowledge he acquired during his master with CAD simulations and Matlab. With the implementation of this software he was able to find the eigenfrequencies of the system which is exposed to large accelerations.

Robert and Mathys showed that PM is truly a high-tech company where you can apply the knowledge from the master studies. The presentation was enjoyed with a nice sandwich from the Taylor board (shoutout). Michiel thanked Robert and Mathys by handing them a high quality bottle of their very own Taylor Port.

Stefan Molenaar





Activities

Excursion: PM

On what was probably the earliest morning of the year so far, a group of 21 PME students gathered at 7 am in front of the Aula for the first Taylor excursion of the year. 3 out of 5 members of the newly installed Taylor board were already awaiting the group. Optimistic as they are, the Taylor board hired a large touring car, including bus driver, which could fit at least 80 students. Since it was very early, the driver decided to take a small detour around the countryside of Overijssel, so everyone could enjoy some extra sleep. Exactly at 10, we arrived at PM Bearings in a wonderful village called Dedemsvaart.

At PM Bearings, the experienced PME students were happy to help the freshmen with tying their Taylor tie for the first time. After some coffee, we started off with an interesting presentation by one of the many bearing enthusiasts working at PM bearings. We learned that the company has been very successful over the years, and that it is nowadays actually run by a guy that is not so much older than most of the PME students! Of course, the company visit wouldn't be complete without a tour around the production sites. PM could proudly show that they use the most advanced equipment that is currently available in the world of machining. From the smallest precision parts to CNC machines as big as a truck, this facility truly exceeds every mechanical engineer's wildest imagination.

After a great lunch consisting of a wide variety of Dutch delicacies, we were introduced to the case study of the afternoon. One of the mysteries that PM bearings is currently facing, is about a counterintuitive result of a modal analysis on preloaded bearings. 4 groups of PME students were given roughly 45 minutes to investigate the setup and come up with a theory that explains the weird phenomenon. Three groups presented their ideas, but one group decided to state that their explanation was exactly the same as the one of the previous presenting group, and used the time to emphasize their jolly name ("Preload makes me stiff"). Surprisingly, this was the group that was chosen as winner by the PM bearings jury! Clarification followed quickly: The new Taylor president was part of the winning group, and after collecting his prize, he showed his appreciation by offering a bottle of Taylor port to the jury. In Holland, we call this "doorgestoken kaart".

Luckily, the PME students are all mature enough to set aside their hard feelings and forgive Taylor's president. He, on the other hand, showed to be an outstanding leader by telling some very funny bearing-related jokes on the way back to Delft, making it an enjoyable ride home.

Marnix Ackermans



Activities

ASML Network Drinks

On the 4th of October, ASML visited the TU Delft with two employees to give a presentation to the students from PME and have some informal talks during a Network reception. The presentation was given in one of the Lecture halls at 3ME. It was completely filled with students who were interested to find out what ASML was and what they do. ASML sent out 2 employees and 1 student which is associated with ASML to tell about what they do, how they do it and why they do it. One of the presenters was a former student of PME who graduated 2 years ago. He was really enthusiastic about his job, which consisted of him travelling the world to fix machines which had broken down. The other employee was much older and had worked for ASML for many years. He told that he was working as a Lead engineer and that he was doing fundamental research. After the presentation, everybody moved to the PME square to have a drink and some typical Dutch snacks, during which everybody had the chance to talk to the employees about their experiences working for ASML.

Jeroen Huisman







An International Story

In a nut shell

About a year back, in mid-December, while working in my cubicle at Hyundai, I received a mail in the noon from TU Delft saying they have accepted my application to study High Tech Engineering. That moment was joyous.

Hoi! Introducing myself, Keerthi Galagali from one of the world's most diverse countries – India. This is my story of how I decided to travel all the way from garden city of India, Bangalore to the home for Blue pottery, Delft. After completing my bachelor's in Mechanical Engineering at BMS College of Engineering, I took up a job at Hyundai Motor India Limited where I worked for a couple of years. It didn't take too long for me to return to the walk down the aisle of a university from that of an office.

I decided to pursue my graduate study in TU Delft as it has a comprehensive course involving real life situations, making students ready for the challenges they would face in the future. With my interests peaked at design and optimization and its applications in mechatronics systems coupled with mechanics and dynamics of the system, I found the High Tech Engineering track of Mechanical Engineering to be alluring as it met my expectations out of a graduate study.



Life's no fun when you end up in your comfort zone. Last few months have been no less than a roller coaster ride, honestly! It was easy getting adjusted to the Dutch lifestyle as the Introduction Program made a gateway. During the initial days, the most obvious and exciting Dutch things that I got used to were the cycling routes, windmills, flatland alongside canals, stroopwafels, cheese and many more. I still try learning one Dutch word a day just out of curiosity from my classmates whenever possible. However, the real feel of doing masters in TU Delft was only felt by the end of first quarter when most of us realised that this was no cake walk and it requires efforts on a daily basis to cope with the syllabus and to do well in our exams. One





An International Story

most obvious difference in the study pattern when compared to my home country was the quarter system when compared to the semester system which made me realise that we have to be strong with our fundamentals to gain the pace with the topics being taught as there would be only 2-3 months of time to catch up with different new lessons and their applications before we write each exam.

I followed a few obligatory courses of Mechanical Engineering like Control System Design, Heat transfer, Physics and Measurements, and a few courses from my track like Engineering Dynamics and Mechatronic System Design. I find that all the courses that I'm following have a wide range of applications in the industries. Attending a few lunch lectures and company visits organised by the Taylor board, we found many professionals practically using the knowledge we are gaining at the moment in significant projects. Besides all the academics, there's some fun time to relax and enjoy. A special mention about the efforts put in by our Taylor board to organise parties every month. Don't miss them, come and enjoy! ;)

In future, I would love to work on a project that would serve a cause for the society. Working on such project would help me build my intellectual ability to think creatively while applying the knowledge I would have gained from studying courses such as mechatronics, mechanics and control systems alongside design and optimization in High Tech Engineering track. On completion of my masters, this would help me connect to innovative minds and solve real world problems thereby realizing my long term goal of effectively making use of my engineering skills to benefit the society.

Keerthi Galagali



Activities

Lunch lecture: Prodrive

After PM Bearings kicked off the new season of lunch lectures, a sunny Tuesday October the 16th was brightened yet again by an interesting lecture organized by the Taylor board. This time Richard Treuren from Prodrive took the floor to give us some insight in the work that he does there.

Since a lot of us weren't familiar with what kind of projects that Prodrive manages, Richard started his presentation with laying out all the different focus areas of the company, of which there were lots! What is even more impressive, is that for nearly all these different focus areas, Prodrive has its own production lines and designs. Richard showed us some pretty cool examples of all the different areas and projects, which gave us a good picture of what Prodrive is about.

He continued his presentation by giving us a more personal insight into how he ended up there through an internship, and what projects he had been working on since he started working in the company. Following up on that, he explained about a project on which he is currently working, the development of a high-end camera. Besides talking about the different challenges and interesting things within the project, Richard explained us a lot about the way of working at Prodrive and made it very insightful to us why he likes working there (one of the perks: free lunch, unfortunately it was confidential whether that lunch tops the 'broodje Leo' we had this day. You might find out during the excursion later this year!). Richard also took some time to answer our questions and told us how Prodrive could be an interesting company for us as students.

All in all it was a very enticing and thorough presentation, so thank you Richard and Prodrive for dropping by, and of course thanks to the Taylor board for inviting them!

Bas Rouleaux



Activities

Excursion: Prodrive

In the early morning of the 21st of November, we left with around 30 students, dressed most formally, to go visit ProDrive in Eindhoven. After a long drive we started off with a nice introduction presentation given by two employees, one of them even being a former Taylor board member: Miranda! Then we got split in smaller groups and were shown around one of the “offices”; large workplaces where Prodrive develops their own automated guided vehicles, designs a system to charge your electric car wireless, produces their own microchips and works on many more great technical innovations. After that we got a nice lunch and we gave Prodrive some amazing Taylor Port in return. We thank them for the lovely day!

Emma Hoes





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Activities

Comsol Course

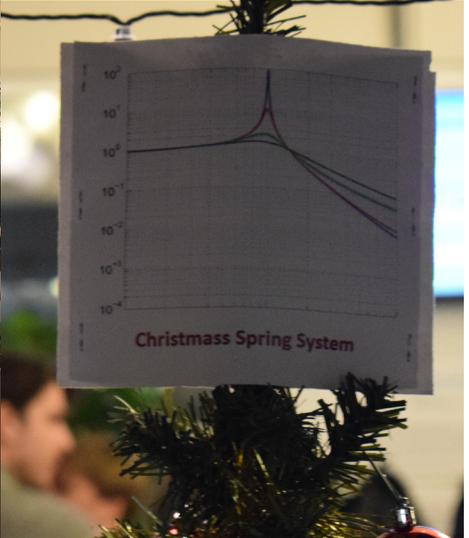
Thursday the 27th of November was the day of the first workshop organized by Taylor this year! Sander Bezuijen from COMSOL visited our lovely faculty to give a training in their computer program. COMSOL is a multiphysics modelling and simulation program that uses Finite Element Methods to compute your solutions. Most people were well prepared and had the software downloaded (legal or not) and installed. But some had some problems, like me, who had to do a last minute installation.

We started with a heat conduction problem which brought up good or bad memories, depending on the grade for Advanced Heat Transfer. After this trip down memory lane, a flow and concentration model had to be made, which was the first example of a multiphysics problem. Sander ended his workshop with an demonstration of how to combine COMSOL with MATLAB, and the other possibilities of how to use COMSOL.

Because we had a very interesting training and coffee breaks with some nice cookies, I can definitely conclude that this workshop was a great success!

Marc Gritter





Activities

PME Christmas Event

Pub Quiz

Somewhere in November, Eveline came by our office with the request (which one might consider to be a demand) if we wanted to organize a pub quiz for the PME staff during the Christmas Event. We said yes of course (was there another option?), under the condition that we would get full creative freedom. This was the case, so we could get started. We wanted to get some input from a staff member for the quiz, so we asked the free spirit Alejandro for his expertise. Together with Alejandro, we came up with some cool and original ideas for the pub quiz, such that it wouldn't be an ordinary quiz purely based on common knowledge. The quiz finally consisted of five categories. For the first one, the lyrics of a song had to be guessed, at the time the music was stopped. Then, we re-enacted some famous movie scenes and the audience had to guess movie. Thirdly, there was a Pictionary phase, with some difficult phrases such as "Unconstrained". Fourthly, we came up with the category "dance the sport", where one member of each team had to act out a combination of a dance and a sport, such as "Ping Pong – Belly Dancing". The fifth and final category was "What the Heck is that?", where we showcased some crazy items like defibrillator toasters, which had to be guessed.



An extraordinarily happy team winning the grand prize of the pub quiz

The level of participation of everyone was very high, which was necessary for this type of an event. This ensured the quiz to be a success, which made us happy of course!

Activities

PME's Got Talent

A unique segment of the PME Christmas event was “PME’s got talent”, where students and staff members got the opportunity to showcase their talents. Of course, there was also an opportunity to win the ultimate prize. Although Eveline was already the moral winner, by organizing such a cool event, with the essential help of Merlijn, who provided all the technical equipment required for such an event. Eventually, there were 11 participants, doing mostly musical acts. The event was also accompanied by a jury, since there was also a competitive element to it. There were three judges in total, each playing the role of a remarkable persona, namely Alejandro, Birgit and Volkert. All of the participants displayed exceptional talent, but there could only be one winner. In the end, Arnold Smolders got the right to take home the extremely large trophy thanks to his very own piano-movie medley. Congratulations Arnold!



Extravagant Judges: Volkert, Birgit and Alejandro

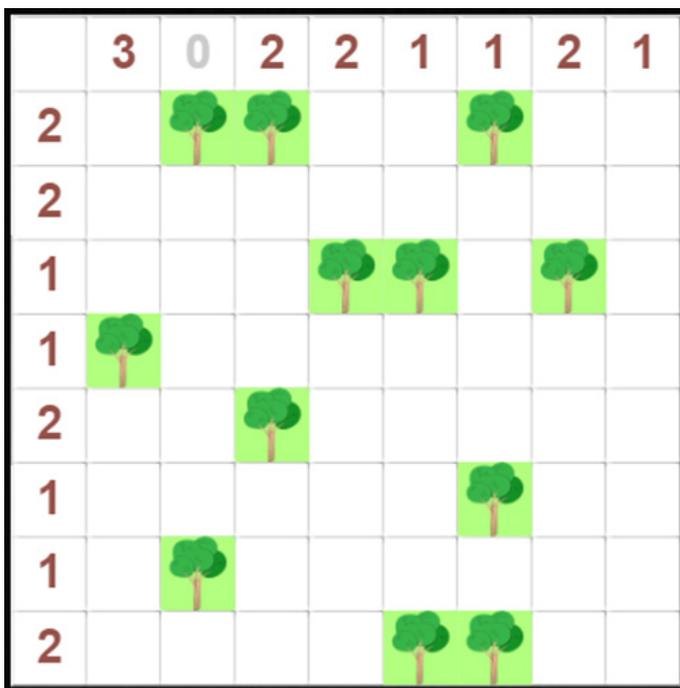
Still P.M.E.

Of course, being the Taylor board, we had to participate in this event. We’ve always wanted to become rock stars instead of engineers, so this was a great opportunity to create our very own band, the Taylor Boys! Luckily, we already had some talent in the group, Meindert already plays in a band as a drummer, Maurits matches Wibi Soerjadi’s skills on piano and Marc has some amazing 3-note skills on guitar. Jeroen has always wanted to be a gangster rapper from the 90s, so we decided to create our own version of “Still D.R.E”. We transformed this song into “Still P.M.E”, coming up with this new name required an exceptional level of creativity. Jeroen took on the role of Dr. Dre, and did most of the rapping, where Michiel became Snoop Dogg and was consequently just smoking weed (acquiring creative inspiration). The performance was a big success and we managed to become 2nd in the final ranking of the talent show!

Michiel Zult



Marc Puzzles You

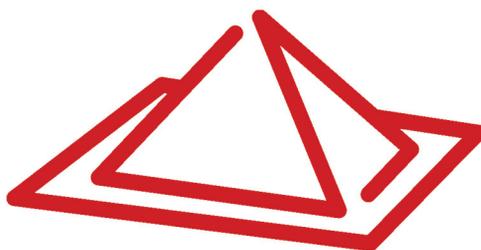


Rules:

- Find all of the hidden tents.
- Each tent is attached to one tree (so there are as many tents as there are trees).
- The numbers across the top and down the side tell you how many tents are in the respective row or column.
- A tent can only be found horizontally or vertically adjacent to a tree.
- Tents are never adjacent to each other, neither vertically, horizontally, nor diagonally.
- A tree might be next to two tents, but is only connected to one

Send your results to us and you might be rewarded with an awesome prize!





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