Engineering Mechanics
Annual Report 2024

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Notice
This Annual Report is available at the EM website.

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Preface

The Dutch tradition in mechanics is a broad and inclusive one, stimulating cross fertilization between the many subdisciplines of mechanics, maintaining close connections to adjacent areas of research, and promoting collaboration across organizational boundaries. The national research school for Engineering Mechanics (EM) embodies this tradition, seeking to connect researchers across a wide range of areas in mechanics.

Rooted in a rich scientific tradition, Engineering Mechanics continues to be a dynamic and rapidly developing field, making significant contributions across numerous application areas, from healthcare and energy to agriculture and high-tech systems. The year 2024 has been a period of growth and expansion for EM. Building on its established reputation as a leading national platform for community building and research training in mechanics, EM further expanded its academic and collaborative reach, strengthening the connection between fundamental science and engineering applications across academia and industry. Several new groups and new PIs joined EM, bringing in new perspectives on and new application areas of mechanics. The growth of EM is evidenced by the increased participation of senior staff members, which rose from approximately 35 FTE in 2021 to around 50 FTE in 2024, corresponding to an increase of approximately 15 FTE in staff positions. The expansion of Engineering Mechanics is also visible in the number of PhD students affiliated with the research school: between 2023 and 2024, the number of PhD students increased from 241 to 276. The growth of EM is testament to the success of its mission to embrace new researchers in the field of mechanics, as well as to the vitality of the Dutch research community in engineering mechanics.

To support the growing community of EM PhD students in their development and connect to contemporary advancements in the area, in 2024 EM enriched its course program with two new graduate-level courses, "Machine Learning" and "Scientific Computing with Open-Source Software", reflecting the growing importance of data-driven and computational approaches in modern engineering research. These additions to the course program were met with exceptional engagement: the total number of participants across the EM course program rose from approximately 150 in previous years to over 270 in 2024, a clear indicator of the School's expanding role in advanced research education. Participation in the annual EM symposium also increased from around 175 to more than 200 participants, demonstrating the School's growing visibility and the strengthening of its national research community.

Collaboration and community building remain central to EM's mission. Throughout 2024, partnerships among universities, research institutes, and industrial organizations continued to flourish, enabling shared expertise, joint supervision, joint projects, and knowledge transfer between academia and industry. These interactions not only enhance the quality and impact of doctoral training but also reinforce the community and ensure that EM's research contributes to addressing real-world engineering and societal challenges.

Summary of 2024

- Growth in doctoral education: The number of PhD positions increased from 241 in 2023 to 276 in 2024, reflecting a strong and growing national engagement in research training within engineering mechanics;
- Expanded course portfolio: Two new graduate-level courses were introduced — "Machine Learning" and "Scientific Computing with Open-Source Software" — addressing the rising importance of data-driven and computational methods in engineering research;
- Record course participation: The EM course program attracted over 270 participants in 2024, up from approximately 150 in previous years;
- Growing research community: Several new research groups and principal investigators (PIs) joined EM, broadening the School's expertise and strengthening its collaborative network;
- Increase in senior staff engagement: Participation from senior staff members rose from about 35 FTE in 2021 to roughly 50 FTE in 2024;
- Lively annual symposium: Attendance at the annual EM symposium grew from around 175 to more than 200 participants, confirming the event's importance as a national meeting point for the mechanics community.

Chapter 1

General information

1. Introduction

The Netherlands have a unique ecosystem of universities, characterized by a strong academic reputation and multilateral collaborations within many scientific disciplines. While individual universities do not generally have critical mass within a specific discipline to render the organization of specialized, advanced graduate courses feasible, in The Netherlands consortia of universities do reach this viable scale. Within this context, in the 1990s several inter-university graduate schools were founded for a variety of scientific disciplines. The status of these inter-university graduate schools is arranged in a formal agreement between the executive boards of the participating universities. One of the universities acts as commissioner for the graduate school, and is responsible for the daily management and administration of the graduate school, including the organization and running of the educational program and the various scientific activities. Until 2014, a formal accreditation system was in place for graduate schools. This accreditation system was administered by the Royal Netherlands Academy of Arts and Sciences (KNAW). With the emergence of local graduate schools, associated with individual universities instead of inter-university consortia, the Royal Academy decided to discontinue the formal accreditation system for graduate schools. Motivated by the significant added value provided to their communities, however, most inter-university graduate schools proceeded without accreditation.

The graduate school on Engineering Mechanics was founded in 1996 and received its first five-year accreditation by KNAW in 1997. Following the Dutch tradition in mechanics after Biezeno and Koiter, the research school on Engineering Mechanics has adopted a broad and inclusive perspective on mechanics, stimulating cross fertilization between the many subdisciplines of mechanics, such as solid mechanics, dynamics, materials science, damage and fracture, and beyond. EM embraces all research groups that are active in these subdisciplines of mechanics at Eindhoven University of Technology, Delft University of Technology, University of Twente, and University of Groningen. Since the establishment of EM, Eindhoven University of Technology has acted as commissioner and has hosted the secretariat. The department of Mechanical Engineering of Eindhoven University of Technology acts as executive commissioner for EM. As a de facto part of the department of Mechanical Engineering of TU/e, Engineering Mechanics is evaluated in conjunction with the department.

Although EM operates primarily at a national level, it also serves as a point of contact for international affiliated organizations. Under the umbrella of the Netherlands Mechanics Committee, EM and its companion organization for fluid mechanics, the JM Burgers Center, jointly represent the Dutch mechanics community.

2. Mission

In accordance with the joint agreement between the participating universities, the interuniversity research school for Engineering Mechanics has a threefold mission:

- Sustaining a strong network for research and education in engineering mechanics;
- Fostering national and international collaboration, both among research groups and with industrial partners;
- Providing joint courses and complementary training activities for PhD candidates from participating and affiliated research groups.

In support of its mission, Engineering Mechanics carries the following engagements:

- Administering an educational program of high-quality advanced courses on subjects relevant to the field of engineering mechanics, to train PhD-students of the participating groups to become qualified independent researchers in the field in accordance with prevailing international standards, and quality control of the educational program.
- Serving a networking function and providing its members with information through the website, annual reports, etc.;
- Representing the field in national and international networks and governing bodies;
- Strengthening the position of scientific research at both the national and international level, while also promoting the career prospects of PhD graduates and researchers in the academic and non-academic labor market, both in the Netherlands and abroad;
- Facilitating, where possible, long-term collaborations with research institutes operating under NWO, TNO, NLR, MARIN, Deltares and ECN, and with research organizations in industry;
- Acting as a knowledge center in the field of engineering mechanics.
- Maintaining an administration of individual members of the inter-university research school for Engineering Mechanics and promoting membership for new researchers and new research groups in the field of engineering mechanics associated with its partner universities;
- Promoting synergetic alignment of research directions and activities of the participating groups pertaining to engineering mechanics;
- Stimulating multilateral national thematic and strategic discussions pertaining to the field of engineering mechanics, including the organization of workshops for representatives from industry, technological institutes and affiliated researchers to identify and discuss the needs of industrial partners with respect to scientific research;
- Exchanging information on and safeguarding of the standards of undergraduate education in the domain of engineering mechanics at the Dutch universities;

3. Governance & Organization

The organizational structure of the inter-university research school for Engineering Mechanics is summarized in Figure 1.1.

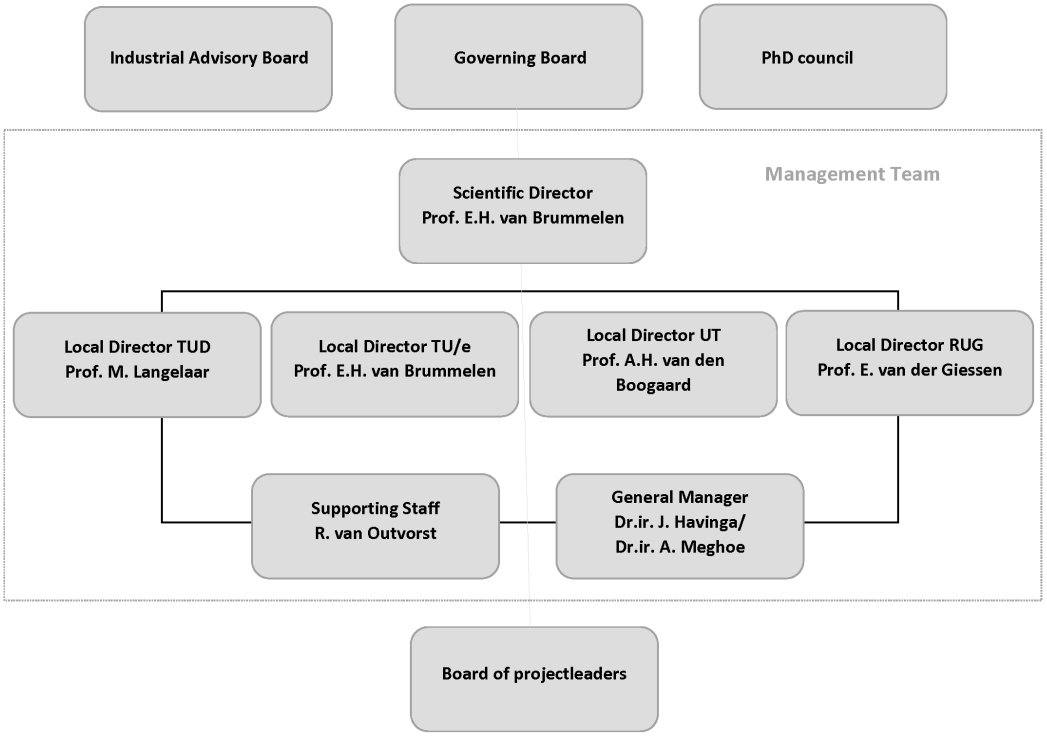

Figure 1.1: Organization chart of Engineering Mechanics (reference date 31st of December 2024).

The Governing Board (see Table 1.1) is in charge of setting the strategic objectives of the research school pertaining to education, research and operation, including finances. As part of its engagements, the Governing Board establishes the educational program of the research school. The members of the Governing Board are appointed by the dean of the executive commissioning department, upon nomination by the Governing Board. The composition of the board, as well as its formal responsibilities and authority, are specified in the joint agreement between the participating universities. The Scientific Director is appointed by the commissioner of EM, and is in charge of the day-to-day management of the research school. Each participating university is represented in the board by a local director, who acts as a representative of their institute, and who assist the Scientific Director. In its capacity as executive commissioner of the Engineering Mechanics research school, the department of Mechanical Engineering of Eindhoven University of Technology provides support for the research school, and administers the secretariat. The directors, general manager and secretary together form the management team of the research school.

The Governing Board of Engineering Mechanics and its Scientific Director receive solicited and unsolicited counsel from two advisory boards, viz. the PhD council composed of representatives of the PhD students in the research school and an Industrial Advisory Board composed of representatives from industry and applied research institutes; see Table 1.2 and 1.3, respectively. The Board of Project Leaders is composed of the permanent-staff members of the affiliated

Governing Board
Prof.dr.ir. A.H. van den Boogaard (Chairman) University of Twente
Prof.dr.ir. M. Langelaar Delft University of Technology
Dr.ir. S. Turteltaub Delft University of Technology
Prof.dr.ir. A.S.J. Suiker Eindhoven University of Technology
Prof.dr.rer.-nat. S. Luding University of Twente
Prof.dr. E.H. van Brummelen University of Eindhoven
Prof.dr. ir. E. van der Giessen University of Groningen

Table 1.1: Governing Board of EM in 2024.

PhD Council
Ir. L.D. (Lloyd) Dodsworth Eindhoven University of Technology Department of Mechanical Engineering
Ir. V.M. (Vincent) Blümer University of Twente Department of Engineering Technology
Ir. L. (Lei) Zhang University of Groningen Faculty of Science and Engineering
Ir. L. (Lidan) Zhang Delft University of Technology Faculty of Mechanical, Maritime and Materials Engineering

Table 1.2: Composition of the PhD council in 2024.

groups, registered as member of EM. This board represents the general assembly of the research school. The general assembly convenes at least once annually in a meeting chaired by the Scientific Director, to discuss the operational progress of the research school.

Industrial Advisory Board
Dr.ir. P. van den Berg Deltares
Dr. ir. F.J. Blom NRG, Petten
Ir. H.J. ten Hoeve NLR, Marknesse
Dr.ir. E. Atzema Tata Steel Research, IJmuiden
Ir. H.C.L. Vos Demcon, Delft
Dr.ir. S. Gielen ASML, Veldhoven
Dr.ir. R. Willekers TNO, Delft

Table 1.3: Industrial Advisory Board of EM in 2024.

4. Participants

The Graduate School on Engineering Mechanics was founded as an inter-university Graduate School by the Eindhoven and Delft University of Technology and the University of Twente. The Eindhoven University of Technology acts as the commissioner, hosting the secretariat. Co-operation takes place through local institutes and consortia.
On the 31st of December 2024, the following groups participate in Engineering Mechanics:

	Department	Group / Staff representative(s)
TUD	Aerospace Engineering	Aerospace Structures and Computational Mechanics Prof.dr. S. Turteltaub
		Wind Energy dr.ir. F. De Prenter
	Mechanical Engineering	Computational Design and Mechanics Prof.dr.ir. M. Langelaar
		Dynamics of Micro and Nanosystems Prof.dr. P. Steeneken
		Biomaterials and Tissue Biomechanics Prof.dr. A. Zadpoor
		Ship and Offshore Structures dr. C.L. Walters
		Mechatronic System Design Prof.dr.ir. J.L Herder
	Civil Engineering and Geosciences	Computational Mechanics, Structural Mechanics and Dynamics Prof.dr.ir. L.J. Sluys
	Electrical Engineering, Mathematics and Computer Science	Numerical Analysis Prof.dr.ir. C. Vuik

	Department	Group / Staff representative(s)
TU/e	Mechanical Engineering	Dynamics and Control Prof.dr.ir. N. van der Wouw
		Multiscale Engineering Fluid Dynamics Prof.dr.ir. E.H. van Brummelen
		Mechanics of Materials Prof.dr.ir. M.G.D. Geers
		Microsystems Prof.dr.ir. J.M.J. den Toonder
		Robotics t.b.d.
	Built Environment	Applied Mechanics and Design Prof.dr.ir. A.S.J. Suiker

	Department	Group / Staff representative(s)
UT	Engineering Technology	Nonlinear Solid Mechanics Prof.dr.ir. A.H. van den Boogaard
		Applied Mechanics and Data Analysis Prof.dr.-ing. B. Rosic
		Dynamics Based Maintenance Prof.dr.ir. T. Tinga
		Production Technology Prof.dr.ir. R. Akkerman
		Multi Scale Mechanics Prof.dr.rer.-nat. S. Luding
		Soil Micromechanics Prof.dr. V. Magnanimo
		Computational Design of Structural Materials Prof.dr.ir. I.M. Gitman
		Surface Technology and Tribology Prof.dr.ir. M.B. de Rooij

	Department	Group / Staff representative(s)
RUG	Science Engineering	Micromechanics Prof.dr.ir. E. van der Giessen
		Computational Mechanics and Materials Engineering Prof.dr. A.I. Vakis
		Cardiovascular Mathematics Prof. C. Bertoglio
		Dynamics and Vibration Prof. M. GhandchiTehrani

For 2024, the total number of EM members amounts to:

	Sources of financing[1]			Total	
	1	2	3	number	FTE (research)
Senior academic staff[2]	144	0	0	144	51.3
PhD[3]	106	72	98	276	220.8
Postdocs[4]	7	7	13	27	21.6
Total	257	79	111	447	293.72

[1](1): University; (2): NWO etc.; (3): Industry, TNO, EC-funds, etc.

[2]The standard EM input for staff members is 0.4 FTE. Researchers that are active in multiple graduate schools are counted for 50% in the EM input (0.2 FTE). The input is proportional with the appointment of the personnel at the affiliated group. The output of guest researchers, as indicated in the input table, is not included in the EM output.

[3]Research input for PhD per year: 0.8 FTE. The PhD research input is only to be included until 4 years after the appointment of the PhD candidate.

[4]Research input for PD per year: 0.8 FTE. The PD research input is only to be included until 2 years after the appointment of the PD researcher.

5. Current research topics

An overview of topics within the scope of Engineering Mechanics groups is generated by creating a SciVal word-cloud of the keyphrases from the publications of the different groups in 2024[1]. The word-cloud for the complete set of publications from 2023 to 2024 from Engineering Mechanics groups is shown below:

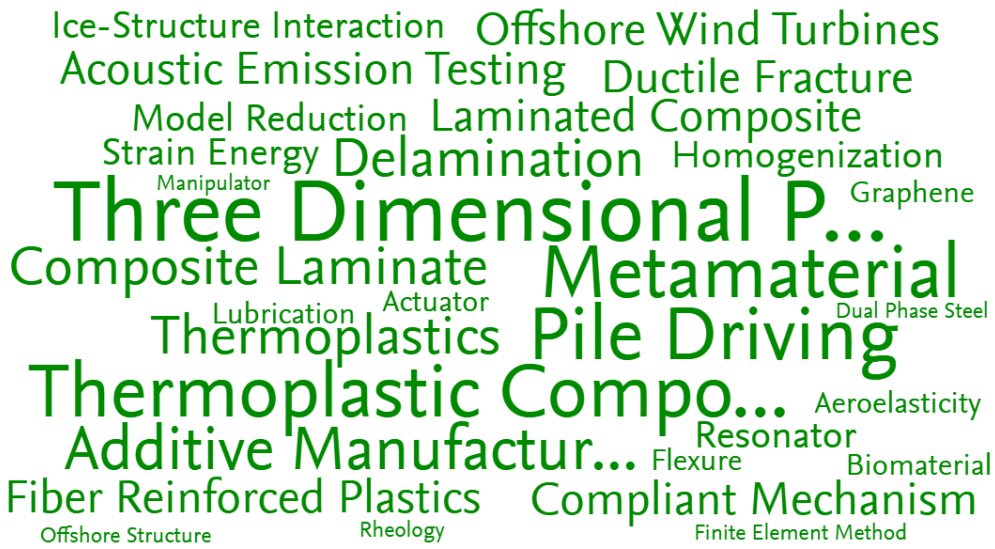

Figure 1.2: Word-cloud generated using all EM publications in 2023 to 2024. The incomplete words are "Three Dimensional Printing", "Thermoplastic Composite" and "Additive Manufacturing".

[1] https://www.scival.com

For each of the institutions, another word-cloud was generated using the publications from Engineering Mechanics groups from that institution in 2023 to 2024:

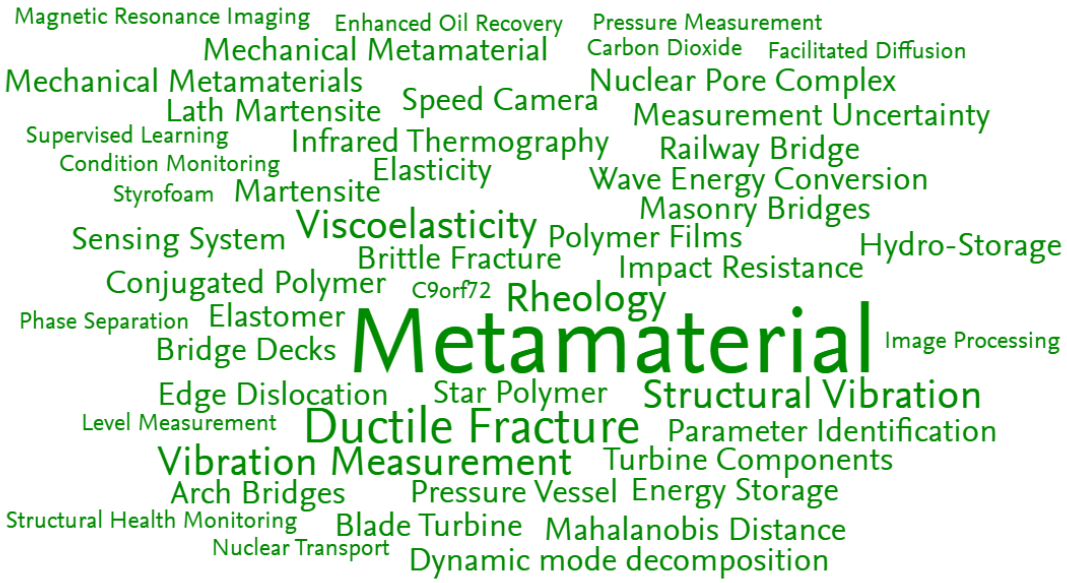

Figure 1.3: Word-cloud generated using publications from RUG in 2023 to 2024

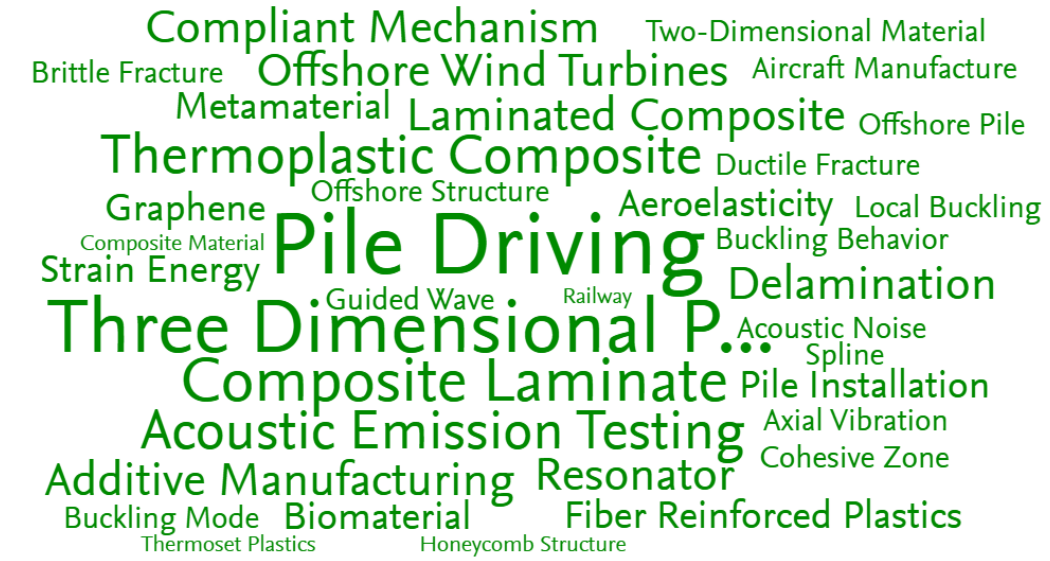

Figure 1.4: Word-cloud generated using publications from TUD in 2023 to 2024. The incomplete words are "Three Dimensional Printing".

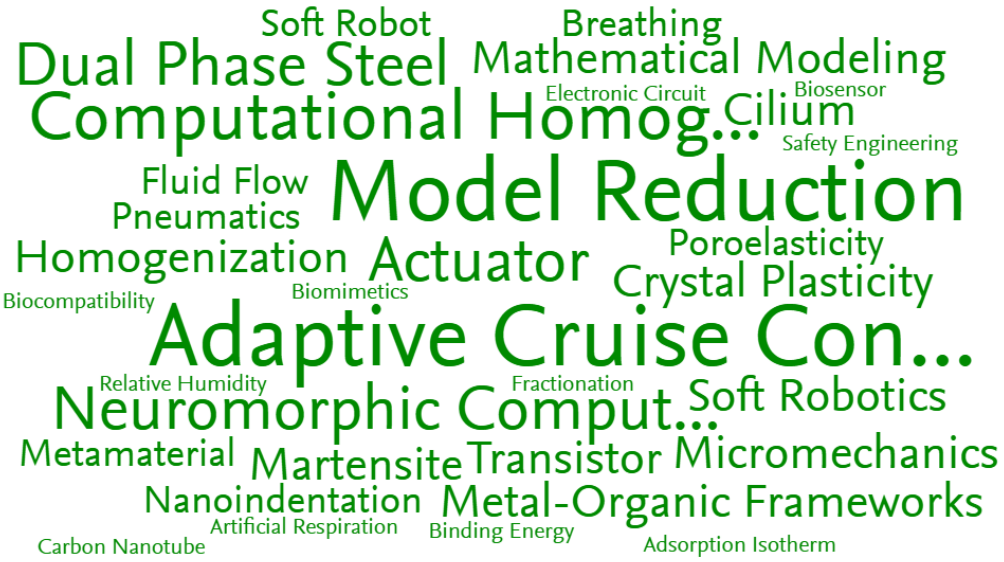

Figure 1.5: Word-cloud generated using publications from TU/e in 2023 to 2024. The incomplete words are "Computational Homogenisation", "Adaptive Cruise Control" and "Neuromorphic Computing".

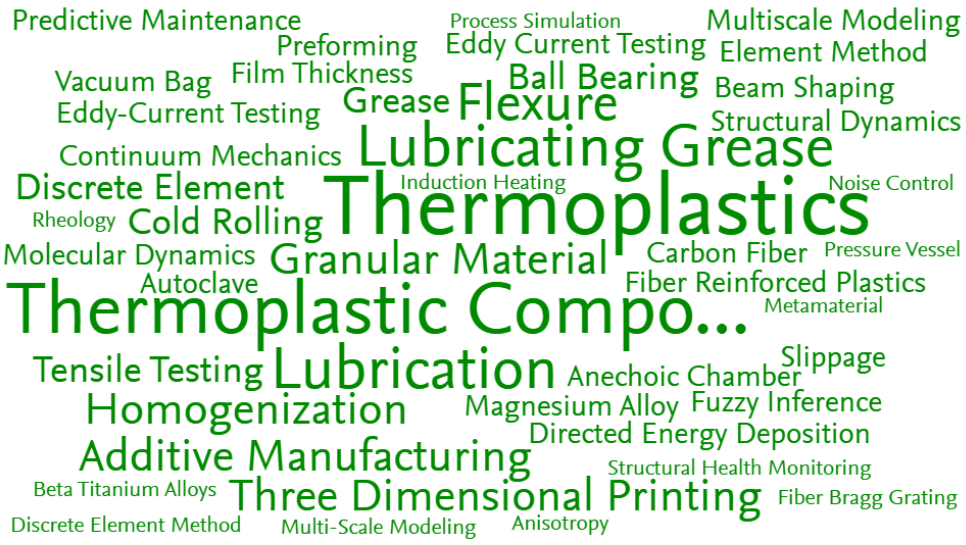

Figure 1.6: Word-cloud generated using publications from UT in 2023 to 2024. The incomplete words are "Thermoplastic Composite".

6. Education

In 2008, a new course programme has been established in the interest of the PhD students and Post-Docs. Key characteristics are: a two-years cycle course programme, formal registration of credit points, more courses and courses of different type (broad or in depth).
The minimum educational load for PhD students is 15 credit points. After completing the programme, a PhD student receives a formal certificate, as proof of his/her successful participation in the EM course programme.
The courses given in 2024 and planned in the following years are listed in this chapter.

1. Engineering Mechanics PhD courses given in 2024

The following EM courses have been lectured as a part of the educational programme:

Title	**Scientific computing with open-source software**
Date & location	16-18 & 23-25 January 2024, UT
Lecturers	T. Weinhart (UT), A. Thornton (UT), I. Ostanin (UT), E. van der Weide (UT) G. van Zwieten (Evalf Computing), B. Uekermann (University of Stuttgart), A. Hazel (University of Manchester)
Credit points	3
First edition	2024
Participants	34

Title	**Machine Learning**
Date & location	11-12 March 2024, UT
Lecturers	B. Rosic (UT), I. Rocha (TUD), M. Abdelmalik (TU/e), F. Maresca (RUG), O. Rokos (TU/e)
Credit points	1
First edition	2024
Participants	89

Title	**Mechanics in Microsystems**
Date & location	2-3 May 2024, TUD
Lecturers	H. Goosen (TUD), M. Ghatkesar (TUD), G. Verbiest (TUD), S. Caneva (TUD)
Credit points	1
First edition	2014 or before
Participants	19

Title	**Interfaces and Coupled Problems**
Date & location	13-15 May 2024, TU/e
Lecturers	H. van Brummelen (TU/e), J. Remmers (TU/e), C. Verhoosel (TU/e), I.C. Garcia (TU/e)
Credit points	1.5
First edition	2014 or before
Participants	20

Title	Advanced Dynamics
Date & location	10-12 & 17-18 June 2024, TUD
Lecturers	Farbod Alijani, Alejandro Aragon, Peter G. Steeneken, Pierpaolo Belardinelli, Hassan HosseinNia, Dario Di Maio, Marcel Ellenbroek, Jurnan Schilder, Peter Wellens, Gerard Verbiest
Credit points	3
First edition	2014 or before
Participants	27

Title	Experimental Engineering Mechanics
Date & location	30 September & 1 October 2024, TU/e
Lecturers	J. Hoefnagels (TU/e), L. Warnet (UT), P. Verleysen (University Gent), M.B. de Rooij (UT), T. Jailin (Université Clermont Auvergne), T. Vermeij (TU/e)
Credit points	1
First edition	2014 or before
Participants	33

Title	Multi-scale and Micromechanics
Date & location	6-8 & 12-14 November 2024, TU/e
Lecturers	M. Geers (TU/e), C. Ayas (TUD), I. Doghri (Université Catholique de Louvain), H. van Dommelen (TU/e), D. Giuntini (TU/e), M. Hütter (TU/e), V. Kouznetsova, (TU/e), T. Magrini (TU/e), F. Maresca (RUG), T. Pardoen (Université Catholique de Louvain), R. Peerlings (TU/e), J. Remmers (TU/e), O. Rokos (TU/e), O. van der Sluis (TU/e)
Credit points	3
First edition	2014 or before
Participants	29

Title	Mechanics of Large Deformations
Date & location	12-13 December 2024, UT
Lecturers	J. Hazrati (UT), S. Perdahcıoğlu (UT), C. Soyarslan (UT)
Credit points	1
First edition	2014 or before
Participants	25

2. Engineering Mechanics PhD course programme for the years 2025-2026

The provisional planning of the EM courses for the first year of the upcoming cycle is given below: Topical courses (typical duration: 1-2 days) and Full courses (typical duration: 6 days)

Title	Main organizer	Scheduling	EC
Structural Health Monitoring: Dynamics & Data Analysis	R. Loendersloot	February 2025	1
Practical Introduction to Parallel Programming	M. Möller	March 2025	2
Continuum Thermodynamics	S. Turteltaub	April 2025	1

Structural Optimization: Algorithms and Applications	M. Langelaar	May 2025	1
Stability of Structures	F. van der Meer	June 2025	3
Nonlinear Material Mechanics	C. Soyarslan	September 2025	3
EM Symposium	MT	October 2025	–
Solution Methods in Computational Mechanics	J. ten Thije Boonkkamp	November 2025	1
Scientific Computing with Open-source Software	T. Weinhart	January 2026	3
Composite materials: design, analysis and manufacturing	D. Peeters	February 2026	1.5
Machine Learning	B. Rosic	March 2026	1
Mechanics in Microsystems	H. Goosen	April 2026	1
Interfaces & Coupled Problems	H. van Brummelen	May 2026	1.5
Advanced Dynamics	F. Alijani	June 2026	1
Experimental Engineering Mechanics	J. Hoefnagels	September 2026	1
EM Symposium	MT	October 2026	–
Multi-scale and Micromechanics	M. Geers	November 2026	3
Mechanics of Large Deformations	J. Hazrati	December 2026	1

7. General description of developments in 2024

2024 was another successful year for the graduate school EM. Like in the previous years, priority was laid on the continuation of the research activities in the field of Engineering Mechanics. This resulted in the following overall output for 2024:

Scientific publications: refereed journals	391
Scientific publications: books, chapters in book	28
Scientific publications: refereed proceedings	103
PhD theses	19

This output is documented in more detail in subsequent chapters of this Annual Report
To stimulate the exchange of information on ongoing research within the Graduate School, the Engineering Mechanics Symposium took place on October 22-23, 2024 at Hotel Papendal, Arnhem. 208 of the senior academic staff and PhD-students participating within the Graduate School attended the Engineering Mechanics Symposium.
prof. Julia Greer presented a keynote lecture, entitled "Intelligentsia of Nano-Architected Hierarchical Materials". The topics of the Workshops at the 2024 EM Symposium were "Metamaterials", "Interface and surface mechanics", "Experimental Mechanics" and "Multi-physics and Coupled problems".
Each of the workshops started with a Plenary Introduction by the Workshop Organizers on the trends and challenges of the topics of the workshops. Next, two of the actual Workshops were scheduled to run in parallel on the first Symposium day, whereas the other two were scheduled to run in parallel on the third Symposium day. Each Workshop consisted of two parts, separated by a break. Each part consisted of two presentations by PhD-students/Postdocs.
In conjunction with the oral presentations there was a PhD-students presentation contest, awarding a prize for the best PhD presentation at each of the Symposium Workshops. Members of the jury were the Workshop Organizers.
In two poster sessions 112 PhD-students and Postdocs of the EM Graduate School presented their current research project. This resulted in stimulating discussions on running projects. In conjunction to the poster sessions a poster contest was organized in which a jury selected the best three contributions.

During the symposium Hugo Verhelst received the 2024 Biezeno award for the PhD thesis about "Isogeometric Analysis of Wrinkling".

Additional remarks:

- There was a meeting of the Advisory Board of the Graduate School on Engineering Mechanics, which took place after the 27th Engineering Mechanics Symposium. At this meeting the future strategy and directions of the EM Graduate School were discussed.
- There was a meeting of the board of project leaders during th EM symposium, in which the EM activities were evaluated and the Engineering Mechanics Symposium was discussed. Plans for the next Engineering Mechanics Symposium, to be held October 22-23, 2024 in Hotel Papendal, Arnhem, were also discussed with all faculty members present. The planned workshop topics for 2025 are: "Composites", "Processing and Manufacturing", "Multi-scale Mechanics", "Robotics and Mechanical systems".

8. Aggregated input and output for 2024

1. Input related to EM, 2024

A subdivision of the input in fte over the participating Universities gives the following results:

	TU/e (fte)	TUD (fte)	UT (fte)	RUG (fte)	Total (fte)
Senior academic staff[1]	11.3	23.7	13.1	3.2	51.3
PhD[2]	48.8	104.8	45.6	21.6	220.8
Postdocs[3]	4.0	12.0	2.4	3.2	21.6
Total	64.1	140.5	61.1	28	293.72

2. Output related to EM, 2024

The total number of publications by the members of Engineering Mechanics is listed below. Publications with co-authors from multiple universities are counted for each of the universities. These publications are counted once in the total Engineering Mechanics publications.
A subdivision of the output over the participating Universities gives the following results:

	TU/e	TUD	UT	RUG	Total
Scientific publications: refereed journals	106	184	78	30	391
Scientific publications: books, chapters in book	6	13	7	2	28
Scientific publications: refereed proceedings	22	57	16	8	103
PhD theses	7	5	5	2	19

[1]The standard EM input for staff members is 0.4 FTE. Researchers that are active in multiple graduate schools are counted for 50% in the EM input (0.2 FTE). The input is proportional with the appointment of the personnel at the affiliated group. The output of guest researchers, as indicated in the input table, is not included in the EM output.

[2]Research input for PhD per year: 0.8 FTE. The PhD research input is only to be included until 4 years after the appointment of the PhD candidate.

[3]Research input for PD per year: 0.8 FTE. The PD research input is only to be included until 2 years after the appointment of the PD researcher.

9. Overview of output per participating group, 2024

In this section the 2024-output per participating group is summarized. Further details can be found in the description of individual groups in subsequent chapters. Aggregated results are reported in the preceding paragraph.
Publications with co-authors from multiple groups are counted for each of the groups. These publications are counted once in the totals of the universities and of total Engineering Mechanics publications in Section 1.8.2.

	Group	Ref. journals	Books, chapters in book	Ref. proceedings	PhD-theses
TU/e	Multiscale Engineering Fluid Dynamics	14	0	0	0
	Mechanics of Materials	39	1	2	3
	Dynamics and Control	22	5	16	3
	Applied Mechanics	9	0	2	0
	Microsystems	18	0	1	1
	Robotics	8	0	2	0
TUD	Dynamics of Micro and Nanosystems (PME)	23	1	1	1
	Computational Design and Mechanics	13	0	2	0
	Aerospace Structures and Computational Mechanics	60	1	23	0
	Ship and Offshore Structures	10	0	6	0
	Computational Mechanics Structural Mechanics and Dynamics	36	5	19	4
	Biomaterials and Tissue Biomechanics	15	0	0	0
	Mechatronics System Design	11	2	1	0
	Numerical Analysis	23	4	4	0
	Wind Energy	0	0	2	0
UT	Nonlinear Solid Mechanics	6	1	3	1
	Applied Mechanics and Data Analysis	12	3	7	0
	Dynamics Based Maintenance	4	0	3	1
	Production Technology	22	0	2	2
	Multi-scale Mechanics	17	2	0	1
	Soil MicroMechanics	4	0	1	0
	Computational Design of Structural Materials	1	1	0	0
	Surface Technology and Tribology	18	0	1	0
RUG	MicroMechanics	9	0	0	0
	Computational Mechanical and Materials Engineering	19	2	3	2
	Cardiovascular Mathematics	1	0	0	0
	Dynamics and Vibration	2	0	5	0

10. National and international affiliations

The research school for Engineering Mechanics, together with its companion organization for fluid mechanics, JMBC, is affiliated with various international organizations in mechanics, within the framework of the Netherlands Mechanics Committee. NMC is affiliated with:

- CISM (Centro internazionale di scienze meccaniche);
- ECCOMAS (European Community on Computational Methods in Applied Sciences);
- EUROMECH (European Mechanics Society);
- IACM (International Association for Computational Mechanics);

– IUTAM (International Union of Theoretical and Applied Mechanics).

Chapter 2

Research documentation per participating department

The following data sources have been consulted:

- EM membership administration
- Scopus (collective indexed output of all EM group members in 2024)

The following rules have been followed to list the research input and output per participating department:

Group members

- PhD students are included until 4 years after the appointment of the PhD candidate.
- If the dissertation defence date is within the period for which the PhD student is included in the annual report, the PhD student will appear in both sections 'Running PhD-projects' and 'Dissertations'.
- Postdoctoral researchers are included until 2 years after the appointment of the PD researcher.

Research input

- The standard EM input for staff members is 0.4 FTE. Researchers that are active in multiple graduate schools are counted for 50% in the EM input (0.2 FTE). The input is proportional with the appointment of the personnel at the affiliated group. The output of guest researchers, as indicated in the input table, is not included in the EM output.
- The research input for PhD students and postdoctoral researchers is counted as 0.8 FTE.

Publicatons

- The publications of all EM staff members in 2024 were gathered using Scopus. Publications of PhD students and Postdoctoral researchers were not gathered separately, but are assumed to have been co-authored by a staff member.
- Publications with co-authors from multiple groups are counted for each of these groups.

1. University of Groningen – Science and Engineering

1. Senior academic staff

MicroMechanics		
prof.dr.ir. E. van der Giessen	Full professor	0.40
dr. A. Giuntoli	Assistant professor	0.40
Computational Mechanical and Materials Engineering		
prof.dr. A. Vakis	Associate professor	0.40
P.D. Druetta	Assistant professor	0.40
dr. A. Krushynska	Assistant professor	0.40
dr.ir. F. Maresca	Assistant professor	0.40
Cardiovascular Mathematics		
prof. C.A. Bertoglio	Associate professor	0.40
Dynamics and Vibration		
dr. L. Cheng	Assistant professor	0.40
	Total FTE[1]:	3.20

2. Running PhD-projects in 2024 related to research school EM

MicroMechanics			
R.P. Pramanik	(PhD 1)	Computational design of soft robots	2024-04-18 – present
Computational Mechanical and Materials Engineering			
A.T. Asiikkis	(PhD 1)	Fluid flows through dense wave energy converter arrays	2021-09-01 – present
B.J.T. Piest	(PhD 2)	MetaFlow: Phononic subsurfaces for controlling flow and reducing flow-induced vibrations	2024-10-01 – present
C. Wang	(PhD 1)	Computational fluid dynamics investigations of dense wave energy converter arrays	2020-11-01 – present
D. Fioravanti	(PhD 2)	Theory and modelling of conventional and HCP high entropy alloys (Next-Coat)	2021-03-01 – present
D.A. Guzman	(PhD 2)	Metamaterial grippers integrated with flexible electronic sensors for grasping modulation	2023-07-01 – present
F. Brunner	(PhD 2)	Predictive modelling of atomistic fracture in Fe-based alloys	2022-06-01 – present
K. Pandey	(PhD 3)	Multi-scale modeling of adhesive wear in zinc-coated steels	2023-11-01 – present
L. Zhang	(PhD 1)	Development of machine-learning atomistic models with quantum accuracy	2020-09-01 – present
L.L.R. La Rosa	(PhD 1)	Multiscale modeling of martensitic transformations in shape memory alloys	2020-10-01 – present

[1]The standard EM input for staff members is 0.4 FTE. Researchers that are active in multiple graduate schools are counted for 50% in the EM input (0.2 FTE). The input is proportional with the appointment of the personnel at the affiliated group. The output of guest researchers, as indicated in the input table, is not included in the EM output.

H.C.V. Veluvali	(PhD 1)	Developing and modeling metamaterial-based personalized medical devices	2023-11-01 – present
R.M. Nienhuis	(PhD 2)	Multiscale Physics-Based Models of Pumped-Hydro Offshore Storage Technology	2020-09-01 – present
S. Beniwal	(PhD 2)	Additively manufactured polymer metamaterials with prescribed dynamic characteristics	2023-07-01 – present
J.Y. Jing	(PhD 1)	Numerical simulation and experimental tests of nano-technologically boosted CO2 EOR	2023-10-01 – present
Y.Q. Qi	(PhD 1)	Bearing capacity and surrounding scour characteristicsof thesuction anchor foundation of the Ocean Battery	2022-11-01 – present
Z. Zhang	(PhD 3)	Programmable design of cellular mechanical metamaterials	2020-11-01 – present
Cardiovascular Mathematics			
G.K. Urrutia Aguilera	(PhD 1)	Personalized cardiac modelling from real time MRI in rest and exercise	2023-12-01 – present
S.J.B. Schomaker	(PhD 1)	Modelling of the cardiovascular system	2022-09-01 – present
Dynamics and Vibration			
H.L. Liu	(PhD 1)	An enhanced defects detection and localization technique based on Ultrasonic Guided Waves in Composite/Metal components	2023-11-01 – present
X.K. Xie	(PhD 1)	Bridge-structure condition monitoring based on data-driven modelling using camera data	2023-11-01 – present
L.M. Esquivel-Sancho	(PhD 3)	Physics-informed machine learning model based on vibration analysis for predictive maintenance.	2024-08-01 – present
L.M. Esquivel-Sancho	(PhD 3)	Physics-informed machine learning model based on vibration analysis for predictive maintenance.	2024-08-01 – present
M.F. Farzannasab	(PhD 1)	Active vibration control	2023-05-17 – present
S. Taghizadeh	(PhD 1)	Health monitoring of composite laminates	2024-10-01 – present
W.Z. Zhang	(PhD 1)	Interpretable nonlinear modal analysis using data-driven modelling for MIMO systems	2024-09-01 – present
X. Han	(PhD 1)	Sensor fusion and machine learning in Predictive Maintenance for railway track at transition zones towards digital transformation inindustry 4.0	2023-11-01 – present
S.Y.X. Si	(PhD 1)	Towards building seismic resilience: Building isolation and risk assessment under earthquakes	2023-11-01 – present

3. Postdocs

Computational Mechanical and Materials Engineering

I.S. Spanos (PD 3) Integrating mechanical metamaterials and flexible electronic sensors into functional grippers, targeted towards applications in the agricultural sector

S. Dindarlou (PD 3) A Micro-mechanical Roughness Transfer Model in Rolling Mastering Strip Surface Roughness During Cold And Skin-pass Rolling

Cardiovascular Mathematics

D.J. Nolte (PD 3) Medical image based inverse problems in multiphysics multiscale cardiovascular simulations

Dynamics and Vibration

M. Askari (PD 1) Vibration Energy Harvesting via Smart Structures

4. Dissertations

Computational Mechanical and Materials Engineering

A. Bechlenberg, *Techno-financial assessment of offshore hybrid renewable energy systems: The performance of wave energy converter arrays and the sizing of renewable energy systems including generation and storage subsystems*, 2024-04-30. Supervisors: Vakis, Antonis, Supervisor Jayawardhana, Bayu, Supervisor Szirbik, Nick, Co-superviso.

L. Zhang, *Multiscale modeling of fracture in bcc metals*, 2024-12-09. Supervisors: van der Giessen, Erik, Supervisor Maresca, Francesco, Co-supervisor.

5. Overview of research input and output Science and Engineering related to EM, 2024

Input

	Sources of financing[2]			Total	
	1	2	3	#	FTE
Senior academic staff[3]	8	0	0	8	3.2
PhD[4]	17	6	4	27	21.6
Postdoc[5]	1	0	3	4	3.2
Total	26	6	7	39	28.0

Output

	Total
Scientific publications: refereed journals	30
Scientific publications: books, chapters in book	2

[2](1): University; (2): NWO etc.; (3): Industry, TNO, EC-funds, etc.

[3]The standard EM input for staff members is 0.4 FTE. Researchers that are active in multiple graduate schools are counted for 50% in the EM input (0.2 FTE). The input is proportional with the appointment of the personnel at the affiliated group. The output of guest researchers, as indicated in the input table, is not included in the EM output.

[4]Research input for PhD per year: 0.8 FTE. The PhD research input is only to be included until 4 years after the appointment of the PhD candidate.

[5]Research input for PD per year: 0.8 FTE. The PD research input is only to be included until 2 years after the appointment of the PD researcher.

Scientific publications: refereed proceedings	8
PhD theses	2

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2. Delft University of Technology – Mechanical Engineering

1. Senior academic staff

Dynamics of Micro and Nanosystems (PME)		
prof.dr. P.G. Steeneken	Full professor	0.40
dr. R.A. Norte	Associate professor	0.40
dr.ir. F. Alijani	Associate professor	0.40
dr. G. Verbiest	Associate professor	0.40
dr.ir. W.J. Westerveld	Assistant professor	0.40
dr. S. Caneva	Assistant professor	0.40
Computational Design and Mechanics		
prof.dr.ir. M. Langelaar	Full professor	0.40
dr.ir. J.F.L. Goosen	Associate professor	0.40
dr.ir. C. Ayas	Associate professor	0.40
dr.ir. A.M. Aragón	Associate professor	0.40
dr. O. Nejadseyfi	Assistant professor	0.40
dr.ir. L.N. Noel	Assistant professor	0.40
Ship and Offshore Structures		
dr. C.L. Walters	Associate professor	0.40
dr.ir. L. Pahlavan	Assistant professor	0.40
dr. A. Grammatikopoulos	Assistant professor	0.16
dr.ir. J.H. den Besten	Assistant professor	0.40
Biomaterials and Tissue Biomechanics		
prof.dr. A.A. Zadpoor	Full professor	0.40
dr. M. Mirzaali	Associate professor	0.40
dr. N. Tumer	Assistant professor	0.40
Mechatronics System Design		
prof.dr.ir. J.L. Herder	Full professor	0.40
J.W. Spronck	Associate professor	0.40
dr.ir. R.A.J. van van Ostayen	Associate professor	0.40
V. van der Wijk	Assistant professor	0.40
dr. J. Yang	Assistant professor	0.40
D. Farhadi	Assistant professor	0.20
	Total FTE[1]:	9.56

2. Running PhD-projects in 2024 related to research school EM

Dynamics of Micro and Nanosystems (PME)			
C.F.D. Wattjes	(PhD 3)	Nonlinear dynamics of 2D nanoresonators	2024-12-07 – present
E. Kartal	(PhD 3)	Nonlinear Dynamics of 2D Nanomechanical Systems	2024-10-01 – present
F.S.L. Wörtche	(PhD 3)	Cyberphysics and levitation for microchip assembly	2022-04-01 – present
I. Gurbuz	(PhD 1)	Smart Microfiltration Membranes Against Biofouling	2024-09-16 – present

[1]The standard EM input for staff members is 0.4 FTE. Researchers that are active in multiple graduate schools are counted for 50% in the EM input (0.2 FTE). The input is proportional with the appointment of the personnel at the affiliated group. The output of guest researchers, as indicated in the input table, is not included in the EM output.

L.N. Norder	(PhD 3)	Nanomechanics and space-missions	2022-08-01 – present
M.J.A. Houmes	(PhD 1)	Investigation into nanomechanical properties of 2d materials and their applications for novel sensors	2020-09-01 – present
N. Wansink	(PhD 2)	Atomic Force Microscopy and data-driven nonlinear dynamics for characterising viscoelasticity of coatings and paints	2024-03-01 – present
P.C.R. Castro Rodriguez	(PhD 1)	Combining integrated photonics with micromechanics for next generation high-fidelity microphones	2022-10-15 – present
R.T. Erdogan	(PhD 1)	Silicon Photonics Ultrasound Sensing	2021-09-15 – present
R.H. Guis	(PhD 3)	Ultrasound AFM	2020-10-01 – present
S.M.S. Mendoza Silva	(PhD 2)	Nanoscopic Mapping of Viscoelasticity in Coatings	2023-10-01 – present
V. Bos	(PhD 3)	Acoustic levitation	2021-11-01 – present
Z. Wang	(PhD 3)	Miniaturized flow control components for integrated microfluidics (F-Minis)	2023-01-01 – present
Z. Li	(PhD 3)	Optimization of nonlinear dynamics in nanomechanical resonators	2020-11-16 – present
Computational Design and Mechanics			
A.C. Garde	(PhD 2)	Advancing x-ray interferometry	2023-01-15 – present
A.C. Vasconcelos	(PhD 1)	Design optimization and prototyping of large-scale metamaterial structures for vibration control	2020-09-01 – present
G.R. Reales	(PhD 3)	Thermo-mechanical studies and design for the CMS Barrel Minimum Ionizing Particle Timing Detector	2020-05-01 – present
J.M. Zwet	(PhD 2)	Novel thermo-dynamic solutions	2021-11-01 – present
K. Wu	(PhD 3)	Structural design and fabrication process planning for multi-axis additive manufacturing	2020-10-01 – present
L. Maga	(PhD 1)	Modeling Cardiac Tissue Growth and Remodeling	2022-09-01 – present
M. Slebioda	(PhD 3)	NXTGEN Hightech	2024-01-05 – present
M. Zhang	(PhD 3)	Metamaterial and Origami based Beam Flexure for High-tech Precision Mechanisms	2022-08-15 – present
N. Hermann	(PhD 1)	Design for Protection	2021-09-01 – present

P.T. Kühner	(PhD 2)	Steering Fracture with Metamaterials (FAME): Turning failure into function	2024-09-01 – present
P. Thakolkaran	(PhD 1)	Learning hidden representations for material design and modeling	2021-09-01 – present
R.J.P. Giele	(PhD 2)	RECIPE	2020-05-01 – present
Y. Yang	(PhD 1)	Process modelling of metal additive manufacturing: towards microstructure control	2021-01-10 – present
Ship and Offshore Structures			
A.A.A. Thomas	(PhD 3)	Dynamic Modelling and Design of Smart Metamaterial for Impact-absorbing Mounts	2023-12-01 – present
A.J. Huijer	(PhD 2)	Development of measurement techniques based on an embedded network of piezoelectric sensors that can monitor hydrodynamic loads and detect damage in a composite marine propeller during operations	2020-11-01 – present
C.S. Saccone	(PhD 3)	FUSION	2023-03-01 – present
C.M. Van Zijl	(PhD 1)	Non-linear structural dynamics in fluid-structure interaction	2023-02-01 – present
F. Riccioli	(PhD 1)	Digital twinning of mooring systems	2022-01-01 – present
J.J. Reijmers	(PhD 1)	PHAReB	2023-09-11 – present
K.A.C. Canny	(PhD 2)	Environmental Vibrations and Acoustic Emissions from Offshore Foundation Installation	2024-10-01 – present
L.P. Lagendijk	(PhD 2)	ECoProp	2022-10-01 – present
M.A.A.M. Adly	(PhD 2)	Advanced failure modelling for safety of welded steel ship structures	2021-09-01 – present
N.C.H. Troost	(PhD 2)	Resurgam	2021-04-04 – present
P.D. Gowda	(PhD 3)	HybridLabs – Accelerating Dutch Innovations in Offshore Renewables Through Data-Driven Hybrid Labs	2024-03-01 – present
P.D. Gowda	(PhD 2)	Sensing and Prediction of Corrosion Fatigue of Welded Joints in Floating Offshore Wind Turbines	2024-03-01 – present

R.H. Habiyaremye	(PhD 2)	Detection, identification and characterization of corrosion damage in acoustic emission based structural health monitoring systems	2023-09-15 – present
R.L.G. Slange	(PhD 2)	FUSION	2023-11-01 – present
W.J. Wong	(PhD 3)	Plasticity of high-strength steels in structures	2020-08-01 – present
Biomaterials and Tissue Biomechanics			
A.M.A.A.A. Al-Sanea	(PhD 3)	Design and Fabrication of 3D Random Bone Microarchitecture Scaffolds and their Role in Bone Fracture	2024-09-01 – present
E. Yarali	(PhD 1)	3D-biomimetic metamaterials	2020-01-11 – present
E.T. Tay	(PhD 1)	Correction of bone deformities in children with developmental hip disease	2022-12-01 – present
G.B. Byrne	(PhD 3)	Experimental Mechanical Characterization of the Heart Wall for Computational Model	2024-09-25 – present
J.L.I. Li	(PhD 3)	3D printed porous networks for in vitro tissue model growth	2022-02-15 – present
L.B. Kunkels	(PhD 1)	Biomimetic Hard-Soft Interfaces	2022-03-15 – present
M.M.G. Mahmoodi Gahrouei	(PhD 2)	Studying the development of hip growth using mechanistic models	2024-02-01 – present
M.R. Homayounfar	(PhD 1)	Creating a 5D hip growth model and discovering study hip joint growth trajectories using AI models	2023-08-01 – present
N.S. Shahriari	(PhD 3)	Developing Patient-specific multi-functional mandibular implants	2023-07-01 – present
R.P. Krijnen	(PhD 1)	Data-driven and Physics-based inference of Multi-scale Cardiac Tissue Behavior	2024-02-01 – present
S. Hörmann	(PhD 2)	Estimation of knee joint forces in different activities using personalized musculoskeletal models and physics-informed neural networks	2024-01-04 – present
S.S. Safarloo	(PhD 1)	Development of integrated sensors to investigate cell mechanobiology	2023-01-06 – present
S. Cardona	(PhD 1)	Modeling Cardiovascular Cell-Tissue Interaction	2024-10-01 – present

S. Panahkhahi	(PhD 2)	Biomimetic design, fabrication and characterization of hard-to-soft connections	2022-08-01 – present
Mechatronics System Design			
C. Song	(PhD 2)	Mechatronic Metamaterials for Dynamic Mode Suppression	2021-12-01 – present
D.M. Syaifoel	(PhD 2)	After harvest robotics	2023-07-01 – present
M.A. ten Wolde	(PhD 1)	Intelligent Mechanical Metamaterials	2021-09-15 – present
M.A.A. Atalla	(PhD 1)	Ultrasonic Friction Modulation of Catheters	2020-11-01 – present
P.R. Roberjot	(PhD 1)	Design of mechanical metamaterials for compact motion systems	2022-09-01 – present
S.H.E. He	(PhD 1)	Contactless Handling System for Thin Substrate.	2022-04-01 – present
T.A. Baaij	(PhD 3)	Contactless particle free wafer handling	2024-02-01 – present
X. Zhang	(PhD 1)	Nonlinear Control for Precision Motion Systems.	2020-10-21 – present
X. Guan	(PhD 1)	Periodic porous Acoustic absorber based on Triply Periodic Minimal Surface	2024-01-01 – present

3. Postdocs

Dynamics of Micro and Nanosystems (PME)		
A.M.P. Martín-Pérez	(PD 3)	Protein Phototermal Optomechanical Analyzer
K. Betlem	(PD 3)	A tiny E-nose
L.V. Fricke	(PD 2)	Novo Coat
M. Kabatas	(PD 3)	Enose
Computational Design and Mechanics		
D.P. Munro	(PD 2)	RECIPE
S. Koppen	(PD 1)	Design optimization of large-deformation shape-morphing surgical tools
Ship and Offshore Structures		
A.J.J. Bram	(PD 3)	Merganser
Mechatronics System Design		
D.B. bulut	(PD 1)	Full Film Lubrication

4. Dissertations

Dynamics of Micro and Nanosystems (PME)

M.J.A. Houmes, *Magnetostriction in 2D material nanomechanical resonators*, 2024-12-19. Supervisors: Steeneken, P.G., Promotor van der Zant, H.S.J., Promotor.

5. Overview of research input and output Mechanical Engineering related to EM, 2024

Input

	Sources of financing[2]			Total	
	1	2	3	#	FTE
Senior academic staff[3]	25	0	0	25	9.6
PhD[4]	25	19	21	65	52.0
Postdoc[5]	2	2	4	8	6.4
Total	52	21	25	98	68.0

Output

	Total
Scientific publications: refereed journals	69
Scientific publications: books, chapters in book	3
Scientific publications: refereed proceedings	10
PhD theses	1

6. Bibliography

Journal articles

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Adams, M., Huijer, A., Kassapoglou, C., Vaders, J.A. and Pahlavan, L., *In Situ Non-Destructive Stiffness Assessment of Fiber Reinforced Composite Plates Using Ultrasonic Guided Waves*, Sensors, **24(9)**, (no pages found) (2024). doi:10.3390/s24092747,

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Alimirzaei, S., Ahmadi Najafabadi, M., Nikbakht, A. and Pahlavan, L., *Investigation of energy absorption capacity of 3D filament wound composite tubes: experimental evaluation, numerical simulation, and acoustic emission monitoring*, Mechanics of Advanced Materials and Structures, **31(13)**, pp. 2727-2742 (2024). doi:10.1080/15376494.2022.2163437,

Ammu, S.K., Chen, X., Ulcay, D.G., Sharma, S., Alijani, F., Steeneken, P.G., Groen, P. and Masania, K., *3D Printing of Lead-Free Piezoelectric Ultrasound Transducers*, Advanced Materials Technologies, **9(23)**, (no pages found) (2024). doi:10.1002/admt.202400858,

[2](1): University; (2): NWO etc.; (3): Industry, TNO, EC-funds, etc.

[3]The standard EM input for staff members is 0.4 FTE. Researchers that are active in multiple graduate schools are counted for 50% in the EM input (0.2 FTE). The input is proportional with the appointment of the personnel at the affiliated group. The output of guest researchers, as indicated in the input table, is not included in the EM output.

[4]Research input for PhD per year: 0.8 FTE. The PhD research input is only to be included until 4 years after the appointment of the PhD candidate.

[5]Research input for PD per year: 0.8 FTE. The PD research input is only to be included until 2 years after the appointment of the PD researcher.

Amoozandeh Nobaveh, A., Herder, J.L. and Radaelli, G., *Compliant variable negative to zero to positive stiffness twisting elements*, Mechanism and Machine Theory, **196**, (no pages found) (2024). doi:10.1016/j.mechmachtheory.2024.105607,

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3. Delft University of Technology – Civil Engineering and Geosciences

1. Senior academic staff

Computational Mechanics Structural Mechanics and Dynamics		
prof.dr.ir. L.J. Sluys	Full professor	0.40
prof.dr.ir. A.V. Metrikine	Full professor	0.40
dr.ir. K.N. van Dalen	Associate professor	0.40
dr.ir. F.P. van der Meer	Associate professor	0.16
dr. A.C. Cabboi	Assistant professor	0.40
dr.ir. A. Tsouvalas	Assistant professor	0.20
dr. A. Anisimov	Assistant professor	0.40
dr. I. Rocha	Assistant professor	0.40
dr.ir. H. Hendrikse	Assistant professor	0.40
dr.ir. E. Lourens	Assistant professor	0.20
dr. M. Lesueur	Assistant professor	0.40
	Total FTE[1]:	3.76

2. Running PhD-projects in 2024 related to research school EM

Computational Mechanics Structural Mechanics and Dynamics			
A. Christoforidou	(PhD 2)	Fatigue performance of steel-reinforced resin connectors in FRP decks to steel girders in highway bridges.	2020-11-01 – present
A. Poot	(PhD 1)	A Novel Bayesian Finite Element Method	2021-08-16 – present
B.V.A. de Almeida	(PhD 2)	Topology optimization of active piezocomposite metamaterials considering manufacturable feature sizes	2022-09-26 – present
E. Sulollari	(PhD 1)	Vibration-Induced Friction Force Modulation	2021-09-01 – present
F. Besseling	(PhD 3)	HIDDEN	2023-11-01 – present
G. Cera	(PhD 3)	Masonry damage modelling to support fragility frameworks for subsidence	2022-12-01 – present
H.A. Alkisaei	(PhD 2)	Waste and manufactured building blocks for a circular structural design methodology	2024-03-01 – present
J. Storm	(PhD 1)	Accelerating Multiscale Finite Element Models with Active Learning Surrogates	2021-07-01 – present
L.F. Riccius	(PhD 1)	Bayesian Machine Learning for Multiscale Modeling of 3D-printed Materials	2021-07-01 – present

[1]The standard EM input for staff members is 0.4 FTE. Researchers that are active in multiple graduate schools are counted for 50% in the EM input (0.2 FTE). The input is proportional with the appointment of the personnel at the affiliated group. The output of guest researchers, as indicated in the input table, is not included in the EM output.

L. Huber	(PhD 2)	Nonlinear-dynamics-based methodology for improved interpretation of geotechnical experimental data for accurate site-response studies	2024-11-20 – present
M. Slebioda	(PhD 3)	NXTGEN Hightech	2024-01-05 – present
M.A.M. Maia	(PhD 1)	Physics-informed machine learning surrogate models for complex materials	2021-02-01 – present
P.A. Atzampou	(PhD 3)	Contactless position control of offshore wind turbines during the installation	2020-09-01 – present
P.H. Hofman	(PhD 2)	Computational Modeling of Progressive Failure in Bonded Composite Parts	2021-12-01 – present
R. Melo Barros	(PhD 3)	Efficient techniques for the assessment of uncertainties of physics-based models on the design of critical components	2024-05-15 – present
R.B. Bol	(PhD 2)	Multi-Scale Modelling of Auxetic Cementitious Composites	2022-09-15 – present
S. Basile	(PhD 2)	Drive system of a resonant Flappy Wings Micro Aerial Vehicle	2023-05-01 – present
S.F. Zwarts	(PhD 1)	Rock mechanics under cyclic hydrogen storage	2023-06-15 – present
T. Gärtner	(PhD 3)	Computational modelling of mechanical metamaterials for impact protection	2021-04-01 – present
S. Srikanth	(PhD 1)	Smart Flying V	2021-09-01 – present
X. Zhang	(PhD 1)	Experimental/Computational investigation on the mechanical properties of 3D printed material	2022-03-01 – present
Y.P. Park	(PhD 1)	Robust Topology Optimization for Sustainable Manufacturing	2024-01-04 – present
Y. Zhang	(PhD 3)	Composite slab design assessment with deep profiled steel sheeting	2023-07-15 – present

3. Postdocs

Computational Mechanics Structural Mechanics and Dynamics

A. Tsetas	(PD 2)	Sustainable Installation of XXL Monopiles (SIMOX)
J. Paul	(PD 2)	HySpeed
S.S.G. Sanchez Gomez	(PD 1)	Gentile Pile Driving
S.N. Verichev	(PD 2)	VibroTwist: a game changing pile driving and removal technology
Z. Nan	(PD 1)	Structural Fire Engineering

4. Dissertations

Computational Mechanics Structural Mechanics and Dynamics

C.C.O. Owen, *On ice mechanics in ice-induced vibrations*, 2024-04-29. Supervisors: Metrikine, A., Promotor Hendrikse, H., Copromotor.

D. Kovacevic, *Computational micromechanics of time- and cycle-dependent failure in unidirectional composites under off-axis loading*, 2024-12-09. Supervisors: van der Meer, F.P., Promotor Sluijs, L.J., Promotor.

F. Xu, *Multiscale Extended Finite Element Method for the Simulation of Fractured Geological Formations*, 2024-03-13. Supervisors: Sluijs, L.J., Promotor Hajibeygi, H., Promotor.

M. Zhao, *Dynamics of underground tunnels: Semi-analytical solution for the response of the system under seismic waves and stability analysis of high-speed moving trains*, 2024-09-11. Supervisors: van Dalen, K.N., Promotor Metrikine, A., Promotor.

5. Overview of research input and output Civil Engineering and Geosciences related to EM, 2024

Input

	Sources of financing[2]			Total	
	1	2	3	#	FTE
Senior academic staff[3]	11	0	0	11	3.8
PhD[4]	9	7	7	23	18.4
Postdoc[5]	2	3	0	5	4.0
Total	22	10	7	39	26.2

Output

	Total
Scientific publications: refereed journals	36
Scientific publications: books, chapters in book	5
Scientific publications: refereed proceedings	19
PhD theses	4

6. Bibliography

Journal articles

Agarwal, S., Colomés, O. and Metrikine, A.V., *Dynamic analysis of viscoelastic floating membranes using monolithic Finite Element method*, Journal of Fluids and Structures, **129**, (no pages found) (2024). doi:10.1016/j.jfluidstructs.2024.104167,

Atzampou, P., Meijers, P.C., Tsouvalas, A. and Metrikine, A.V., *Contactless control of suspended loads for offshore installations: Proof of concept using magnetic interaction*, Journal of Sound and Vibration, **575**, (no pages found) (2024). doi:10.1016/j.jsv.2024.118246,

[2](1): University; (2): NWO etc.; (3): Industry, TNO, EC-funds, etc.

[3]The standard EM input for staff members is 0.4 FTE. Researchers that are active in multiple graduate schools are counted for 50% in the EM input (0.2 FTE). The input is proportional with the appointment of the personnel at the affiliated group. The output of guest researchers, as indicated in the input table, is not included in the EM output.

[4]Research input for PhD per year: 0.8 FTE. The PhD research input is only to be included until 4 years after the appointment of the PhD candidate.

[5]Research input for PD per year: 0.8 FTE. The PD research input is only to be included until 2 years after the appointment of the PD researcher.

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4. Delft University of Technology – Aerospace Engineering

1. Senior academic staff

Aerospace Structures and Computational Mechanics		
prof.dr. C. Kassapoglou	Full professor	0.40
prof.dr.ir. C. Bisagni	Full professor	0.40
C.A. Dransfeld	Full professor	0.40
ir. T. Sijpkes	Associate professor	0.40
dr.ir. J.J.E. Teuwen	Associate professor	0.40
dr.ir. S.R. Turteltaub	Associate professor	0.40
dr. S.J. García	Associate professor	0.20
dr.ir. R. de Breuker	Associate professor	0.40
dr.ir. R.C. Alderliesten	Associate professor	0.40
prof. K. Masania	Associate professor	0.40
B. Caglar	Assistant professor	0.40
dr. B.G. Giovanardi	Assistant professor	0.40
dr. B. Chen	Assistant professor	0.40
dr. X. Wang	Assistant professor	0.40
dr.ing. S.G.P. Castro	Assistant professor	0.40
dr.ir. N. Yue	Assistant professor	0.40
dr. Y.T. Tang	Assistant professor	0.40
dr.ir. J.M.J.F. van Campen	Assistant professor	0.40
dr.ir. D.M.J. Peeters	Assistant professor	0.40
dr. J. Sodja	Researcher	0.16
Wind Energy		
F. de Prenter	Assistant professor	0.20
dr. D.Z. Zappala	Assistant professor	0.40
	Total FTE[1]:	8.16

2. Running PhD-projects in 2024 related to research school EM

Aerospace Structures and Computational Mechanics			
A.M. Mohan	(PhD 1)	A Non-Destructive Approach to Material Degradation Assessment Using Nonlinear Ultrasonic Guided Wave Interactions	2024-06-01 – present
A.P.P. Pereira do Prado	(PhD 3)	ATED – AEROELASTIC TAILORING ENABLED DESIGN	2022-02-21 – present
A.T. bayrak	(PhD 1)	Methodologies for analysis, testing and certification of welded thermoplastic composite aerostructures	2024-07-12 – present
A.M. Pereira	(PhD 3)	Methodology for the design and analysis towards certification of butt-joint thermoplastic composite orthogrid stiffened panels	2022-04-15 – present

[1]The standard EM input for staff members is 0.4 FTE. Researchers that are active in multiple graduate schools are counted for 50% in the EM input (0.2 FTE). The input is proportional with the appointment of the personnel at the affiliated group. The output of guest researchers, as indicated in the input table, is not included in the EM output.

A. Schiller	(PhD 3)	SUSTAINair	2021-03-01 – present
A.M. Wulff	(PhD 1)	Quantum and machine learning methods for stacking retrieval of laminated composite materials	2022-08-01 – present
A. Malladi	(PhD 3)	Fiber Path Planning for High Gaussian Curvature Structures Optimised for Automated Fiber Placement	2024-08-15 – present
B.T. Tallapragada	(PhD 3)	Extreme Mechanics of Architected Materials	2024-01-15 – present
B. Saify	(PhD 2)	Flying V Flight Control	2023-03-01 – present
C. Oliveira	(PhD 3)	Reliablade 2	2024-08-15 – present
C.L. Lankhof	(PhD 3)	Voxel-level tayloring of the properties of composite materials	2024-01-16 – present
D. Raso	(PhD 2)	Tentative: Structural design of composite storage tanks for future aviation applications	2024-09-02 – present
D. Eijkelhof	(PhD 2)	Weight scaling of fixed-wing airborne wind energy kites.	2022-05-12 – present
E. Filippou	(PhD 3)	HyCoNoS - Hybrid load alleviation by fluidic/reversed control and nonlinear structures	2023-05-01 – present
F.J.S.O. Sanchez Olivera	(PhD 3)	Effect of defects in wind turbine blades manufacturing	2024-09-16 – present
G. Ismayilova	(PhD 3)	PREDICTING AND REDUCING THICKNESS VARIATIONS IN AFP	2024-08-15 – present
G. Frattini	(PhD 3)	Multiscale modelling of manufacturing of composite aerostructures with short thermoplastic tapes	2024-12-01 – present
H.F. Maathuis	(PhD 3)	Aeroelastic Tailoring Enabled Design	2022-05-01 – present
I.T. Tsatsas	(PhD 3)	A Hybrid Test Methodology for Full-Scale Aeroelastic Testing of Camber Morphing Technology	2024-06-01 – present
I. Birgaoanu-Acaei	(PhD 2)	Reliability-based strength prediction of ultrasonically welded thermoplastic joints	2022-09-15 – present
I. Birgaoanu-Acaei	(PhD 2)	Reliability-based strength prediction of ultrasonically welded thermoplastic joints	2022-09-15 – present
I. Komala	(PhD 1)	Optimization of composite pressure vessels subject to thermo-mechanical loading conditions for cryogenic hydrogen storage	2024-01-15 – present
K.J. Mesman	(PhD 1)	QAIMS - Learning surrogate modelling	2022-09-15 – present

L.A. Afilal	(PhD 1)	Influence of AFP defects and low temperature on planar delamination behaviour	2024-09-09 – present
M.A. Raja	(PhD 3)	Data-Driven Computational Micromechanics: A Deep Neural Network Framework for Accurate and Efficient Composite Design with Defect Integration	2024-09-01 – present
M.H.I. Elalfy	(PhD 1)	Aeroelastic Tailoring Enabled Design	2022-01-01 – present
M.A. Amani	(PhD 1)	Manufacturing of living composites	2021-08-18 – present
P.G. Georgopoulos	(PhD 1)	Development of Multiple Degree of Freedom Camber Morphing Wing	2022-05-15 – present
P.W. Wurzner	(PhD 1)	Materials Modelling of High Temperature Ceramics Under Solar Radiation with Quantum Machine Learning	2022-09-12 – present
R.B. Brambilla	(PhD 3)	The role of curvature in fracture mechanics of architected materials	2024-04-01 – present
S.K. Kota	(PhD 1)	Computational modelling of fracture in beam-based architected materials under impact loading	2021-10-16 – present
S.J. van Elsloo	(PhD 3)	Manned-unmanned teaming through safe in-flight launch and recovery of unmanned aircraft systems	2022-07-15 – present
S.A. Anand	(PhD 1)	Low-fidelity modelling of vertical drop for metallic fuselage sections	2021-12-15 – present
S. Pantoji	(PhD 1)	On The Differences Between As-Designed and As-Manufactured Automated Fiber Placement (AFP) Composites	2022-02-01 – present
S. de Boer	(PhD 3)	Control Surface Layout Optimisation	2023-01-15 – present
M.V. Madabhushi Venkata	(PhD 1)	Optimization of Laminated Composites	2022-08-08 – present
V.K. Poorte	(PhD 1)	Hydrogen Storage for Civil Aviation	2021-10-01 – present

3. Postdocs

Aerospace Structures and Computational Mechanics

N. Garg	(PD 3)	Life cycle evaluation and design of thermoplastic hydrogen storage vessels.

Wind Energy

R.S. Battu	(PD 3)	Reliablade2

4. Dissertations

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5. Overview of research input and output Aerospace Engineering related to EM, 2024

Input

	Sources of financing[2]			Total	
	1	2	3	#	FTE
Senior academic staff[3]	22	0	0	22	8.2
PhD[4]	15	5	17	37	29.6
Postdoc[5]	0	0	2	2	1.6
Total	37	5	19	61	39.4

Output

	Total
Scientific publications: refereed journals	60
Scientific publications: books, chapters in book	1
Scientific publications: refereed proceedings	25
PhD theses	0

6. Bibliography

Journal articles

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[2](1): University; (2): NWO etc.; (3): Industry, TNO, EC-funds, etc.

[3]The standard EM input for staff members is 0.4 FTE. Researchers that are active in multiple graduate schools are counted for 50% in the EM input (0.2 FTE). The input is proportional with the appointment of the personnel at the affiliated group. The output of guest researchers, as indicated in the input table, is not included in the EM output.

[4]Research input for PhD per year: 0.8 FTE. The PhD research input is only to be included until 4 years after the appointment of the PhD candidate.

[5]Research input for PD per year: 0.8 FTE. The PD research input is only to be included until 2 years after the appointment of the PD researcher.

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van Campen, J.M., *Exploring the potential of variable stiffness design in reducing the life-cycle impact of composite aircraft parts*, AIAA SciTech Forum and Exposition, 2024, no volume, (no pages found) (2024). doi:10.2514/6.2024-0835,

5. Delft University of Technology – Electrical Engineering, Mathematics & Computer Science

1. Senior academic staff

Numerical Analysis

prof.dr.ir. M.B. van Gijzen	Full professor	0.40
prof.dr.ir. C. Vuik	Full professor	0.20
dr. M. Möller	Associate professor	0.40
dr. A. Palha	Associate professor	0.40
dr. A.H. Heinlein	Assistant professor	0.40
dr. D. Toshniwal	Assistant professor	0.40
	Total FTE[1]:	2.20

2. Running PhD-projects in 2024 related to research school EM

Numerical Analysis

D.C. Cabanas	(PhD 3)	An Isogeometric Discretization of Linear Elasticity using Finite Element Exterior Calculus	2023-10-15 – present
J. Li	(PhD 2)	Flexible Floating Structure Modelling and Analysis	2023-07-01 – present
J. Dekker	(PhD 1)	Efficient structure-preserving isogeometric discretizations for fluid flow problems on complex geometries	2023-11-15 – present
K.W. Dijkstra	(PhD 1)	Variational Multiscale methods for the Magnetohydrodynamics equations	2023-01-01 – present
K.K. Kevopoulos	(PhD 2)	Scientific machine learning for cardiovascular digital twins	2024-11-15 – present
K.A. Slepova	(PhD 1)	PDE-based segmentation methods for noisy MRI scans	2024-01-26 – present

3. Postdocs

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4. Dissertations

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[1]The standard EM input for staff members is 0.4 FTE. Researchers that are active in multiple graduate schools are counted for 50% in the EM input (0.2 FTE). The input is proportional with the appointment of the personnel at the affiliated group. The output of guest researchers, as indicated in the input table, is not included in the EM output.

5. Overview of research input and output Electrical Engineering, Mathematics & Computer Science related to EM, 2024

Input

	Sources of financing[2]			Total	
	1	2	3	#	FTE
Senior academic staff[3]	6	0	0	6	2.2
PhD[4]	3	2	1	6	4.8
Postdoc[5]	0	0	0	0	0.0
Total	9	2	1	12	7.0

Output

	Total
Scientific publications: refereed journals	23
Scientific publications: books, chapters in book	4
Scientific publications: refereed proceedings	4
PhD theses	0

6. Bibliography

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[2](1): University; (2): NWO etc.; (3): Industry, TNO, EC-funds, etc.

[3]The standard EM input for staff members is 0.4 FTE. Researchers that are active in multiple graduate schools are counted for 50% in the EM input (0.2 FTE). The input is proportional with the appointment of the personnel at the affiliated group. The output of guest researchers, as indicated in the input table, is not included in the EM output.

[4]Research input for PhD per year: 0.8 FTE. The PhD research input is only to be included until 4 years after the appointment of the PhD candidate.

[5]Research input for PD per year: 0.8 FTE. The PD research input is only to be included until 2 years after the appointment of the PD researcher.

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Saifullin, I., Voskov, D., Novikov, A., Wapperom, M., Khait, M., Tian, X., Lyu, X., De Hoop, S., Orozco, L., Palha, A. and Chen, Y., *DARTS open-source reservoir simulation framework*, European Conference on the Mathematics of Geological Reservoirs, ECMOR 2024, **2**, pp. 942-960 (2024).

6. Eindhoven University of Technology – Built Environment

1. Senior academic staff

Applied Mechanics

prof.dr.ir. A.S.J. Suiker	Full professor	0.40
dr.ir. H. Hofmeyer	Associate professor	0.40
dr. E. Bosco	Associate professor	0.40
dr. P. Poosolhjouy	Assistant professor	0.40
	Total FTE[1]:	1.60

2. Running PhD-projects in 2024 related to research school EM

Applied Mechanics

A.B.B. Bagheri Behboud	(PhD 2)	Experimental Micro-mechanics for Cultural Heritage	2023-09-01 – present
D.W. Westert	(PhD 2)	Experimental Micro-Mechanics for Canvas Paintings	2024-11-04 – present
E.A. Dizman	(PhD 2)	A numerical approach to predict aging and degradation of oil paintings	2023-04-01 – present
K. Hutchinson	(PhD 1)	Forensic Biomechanics for Infant Injury Investigation	2022-10-15 – present
P. Pirmoradi	(PhD 1)	Multi-Scale Modeling of Fiber-Reinforced-Concrete Structures	2021-06-01 – present
T. Ezendam	(PhD 2)	Realistic geometries for optimal structural, thermal, and lighting performance, IQD and user interaction for real-world design support	2021-03-29 – present
Z. Chen	(PhD 1)	Development of a multi-scale computational method for predicting the mechanical properties of coated fabrics	2023-11-03 – present

3. Postdocs

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4. Dissertations

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[1]The standard EM input for staff members is 0.4 FTE. Researchers that are active in multiple graduate schools are counted for 50% in the EM input (0.2 FTE). The input is proportional with the appointment of the personnel at the affiliated group. The output of guest researchers, as indicated in the input table, is not included in the EM output.

5. Overview of research input and output Built Environment related to EM, 2024

Input

	Sources of financing[2]			Total	
	1	2	3	#	FTE
Senior academic staff[3]	4	0	0	4	1.6
PhD[4]	3	4	0	7	5.6
Postdoc[5]	0	0	0	0	0.0
Total	7	4	0	11	7.2

Output

	Total
Scientific publications: refereed journals	9
Scientific publications: books, chapters in book	0
Scientific publications: refereed proceedings	2
PhD theses	0

6. Bibliography

Journal articles

Frasca, F., Verticchio, E., Bosco, E., Kuka, E., Lee, D.S.H., Andersen, C.K., Bertolin, C. and Siani, A.M., *Assessing microclimate thresholds for heritage preventive conservation to achieve sustainable and energy efficiency goals in a changing climate*, Scientific Reports, **14(1)**, (no pages found) (2024). doi:10.1038/s41598-024-69395-3,

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Perles, A., Fuster-López, L. and Bosco, E., *Preventive conservation, predictive analysis and environmental monitoring*, Heritage Science, **12(1)**, (no pages found) (2024). doi:10.1186/s40494-023-01118-9,

[2](1): University; (2): NWO etc.; (3): Industry, TNO, EC-funds, etc.

[3]The standard EM input for staff members is 0.4 FTE. Researchers that are active in multiple graduate schools are counted for 50% in the EM input (0.2 FTE). The input is proportional with the appointment of the personnel at the affiliated group. The output of guest researchers, as indicated in the input table, is not included in the EM output.

[4]Research input for PhD per year: 0.8 FTE. The PhD research input is only to be included until 4 years after the appointment of the PhD candidate.

[5]Research input for PD per year: 0.8 FTE. The PD research input is only to be included until 2 years after the appointment of the PD researcher.

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Xu, Q., Hofmeyer, H. and Maljaars, J., *A two-scale method to include essential behaviour of bolted connections in structures including elevated temperatures*, Theoretical and Applied Mechanics Letters, **14(6)**, (no pages found) (2024). doi:10.1016/j.taml.2024.100526,

Xu, Q., Hofmeyer, H. and Maljaars, J., *A two-scale method to include essential screw connection behaviour in two-way coupled fire-structure simulations*, Journal of Structural Fire Engineering, **15(2)**, pp. 247-266 (2024). doi:10.1108/JSFE-01-2023-0005,

Xu, Q., Hofmeyer, H., Maljaars, J. and van Herpen, R.A., *Full-Scale Fire Resistance Testing and Two-Scale Simulations of Sandwich Panels with Connections*, Fire Technology, **60(4)**, pp. 2461-2488 (2024). doi:10.1007/s10694-023-01463-y,

Xu, Q., Hofmeyer, H., Maljaars, J. and van Herpen, R.A., *Pyrolysis modelling of insulation material in coupled fire-structure simulations*, Journal of Building Engineering, **98**, (no pages found) (2024). doi:10.1016/j.jobe.2024.110969,

Books and book chapters

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Refereed proceedings

Lin, P.Y., Andersen, K., Schmidt, R., Schoenmakers, S., Hofmeyer, H., Pauwels, P. and IJsselsteijn, W., *Informed by Yarns - Proposing Knitting Patterns for Revealing Digital System Activities*, ACM International Conference Proceeding Series, no volume, (no pages found) (2024). doi:10.1145/3679318.3685338,

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7. Eindhoven University of Technology – Mechanical Engineering

1. Senior academic staff

Multiscale Engineering Fluid Dynamics		
prof.dr.ir. E.H. van Brummelen	Full professor	0.20
P.S. Grassia	Associate professor	0.20
dr.ir. C.V. Verhoosel	Associate professor	0.40
dr. A. Luna Triguero	Assistant professor	0.20
dr.ir. M.R.A. Abdelmalik	Assistant professor	0.20
Mechanics of Materials		
prof.dr.ir. M.G.D. Geers	Full professor	0.40
dr.ir. V.G. Kouznetsova	Associate professor	0.40
dr.ir. J.P.M. Hoefnagels	Associate professor	0.40
dr.ir. J.J.C. Remmers	Associate professor	0.40
prof.dr.ir. O. van der Sluis	Associate professor	0.04
dr.ir. R.H.J. Peerlings	Associate professor	0.40
dr.ir. J.A.W. van Dommelen	Associate professor	0.40
dr.ir. Rokos	Assistant professor	0.40
prof.dr. T.M. Magrini	Assistant professor	0.40
dr.ir. D. Giuntini	Assistant professor	0.40
Dynamics and Control		
prof.dr.ir. N. van de Wouw	Full professor	0.20
prof.dr.ir. I. Lopez Arteaga	Full professor	0.20
dr.ir. I.J.M. Besselink	Associate professor	0.40
dr. S.R. Eugster	Associate professor	0.20
dr.ir. R.H.B. Fey	Associate professor	0.40
dr.ir. A. Pogromsky	Associate professor	0.40
dr.ir. A.A. Lefeber	Assistant professor	0.40
dr.ing. I. Cortes Garcia	Assistant professor	0.20
dr. C.M.M. Bourquard	Assistant professor	0.40
dr. C. Murguia	Assistant professor	0.10
Microsystems		
prof.dr.ir. J.M.J. den Toonder	Full professor	0.40
dr.ir. Y.B. van de Burgt	Associate professor	0.40
Robotics		
dr.ir. A. Saccon	Assistant professor	0.40
dr.ir. J. Legrand	Assistant professor	0.40
dr.ir. I.A. Kuling	Assistant professor	0.40
	Total FTE[1]:	9.74

2. Running PhD-projects in 2024 related to research school EM

Multiscale Engineering Fluid Dynamics			
A.A.B. Aissa Berraies	(PhD 3)	Advanced simulation for actuation control of smart micro-fluidic valve	2020-10-05 – present

[1]The standard EM input for staff members is 0.4 FTE. Researchers that are active in multiple graduate schools are counted for 50% in the EM input (0.2 FTE). The input is proportional with the appointment of the personnel at the affiliated group. The output of guest researchers, as indicated in the input table, is not included in the EM output.

B.W.T. Gieling	(PhD 2)	Inferring collision kernels for the Boltzmann equation using Machine Learning techniques	2024-08-15 – present
C.B. Bozdoğan	(PhD 2)	Modeling and Simulation of Photopolymerization in Printing Processes	2024-06-03 – present
H.A. Melchers	(PhD 1)	Neural Green's Operators (NGO) as Surrogates for Parametric Solutions of Partial Differential Equations (PDEs): application to first-principle models for magnetic confinement fusion energy systems	2023-03-01 – present
M.M. Hodzelmans	(PhD 2)	SHAwave	2024-01-11 – present
R.K. Sharma	(PhD 2)	Implementation and Analysis of Boundary conditions for the Boltzmann equation	2023-10-23 – present
R. Lima de Souza e Silva	(PhD 1)	Bayesian uncertainty quantification of constitutive laws for engineering systems	2023-08-30 – present
R. Willems	(PhD 2)	Computational-model-based decision support for patients at risk for sustained ventricular tachycardias	2020-10-01 – present
Mechanics of Materials			
A.F. Kuloglu	(PhD 3)	Simulation methodologies for metamaterial integration at system level	2024-10-14 – present
A.C.A.M. Timmermans	(PhD 1)	Experimental and numerical analysis of the sintering behavior of multi-layer membranes	2024-09-09 – present
C.A. Rojas Vega	(PhD 1)	Fundamental Fluid Dynamics Challenges in Inkjet Printing – Liquid-paper interaction and paper swelling	2023-02-01 – present
C.J.A. Mornout	(PhD 3)	Improve Bendability of Ultra-High Strength AR- and S-Grades	2023-09-15 – present
C.B. Florencio Gomes	(PhD 3)	Design and modelling techniques for metamaterials based on emergent non-linear phenomena	2024-09-02 – present
C. Yan	(PhD 3)	Mechanical behavior of supercrystalline nanocomposites	2020-07-01 – present

D. König	(PhD 3)	Next-generation coatings for advanced wear-resistant materials (Next-Coat)	2020-11-01 – present
F. Hendriks	(PhD 1)	Hybrid Machine Learning and Physics based multi-scale models for smart materials	2021-11-08 – present
K. Karaca	(PhD 3)	Towards hybrid model formulations: data-driven solutions exploiting constitutive equations	2022-10-01 – present
K.A. van Akkerveken	(PhD 2)	Failure mechanisms in electromagnetic actuators	2024-01-01 – present
L.D. Dodsworth	(PhD 1)	Bridging synthetic RVE data to micromechanical tests for efficient data-coupled models	2023-05-01 – present
M. Aarab	(PhD 2)	Additive Manufacturing for Electronic Packaging	2023-12-01 – present
S.N.R. Mudunuru	(PhD 3)	Bulk performance prediction of polymer composites	2022-07-01 – present
N.M. Sanchez Martinez	(PhD 3)	Efficient tools for analysis of hybrid Additive Manufacturing processes	2021-08-12 – present
V.V.S.P.R. Babbepalli	(PhD 3)	Reduced Order Modelling for digital twins of the imaging catheter	2020-12-07 – present
R. van Hoof	(PhD 3)	Development of An Efficient and Accurate Digital Twin of Interacting Medical Interventional Devices and Patient Tissues to Create Synthetic X-Ray Images	2023-04-03 – present
R.L.C. Liupekevicius Carnielli	(PhD 2)	Dynamic metamaterials breaking through sub-wavelength application limits SUBMETA	2020-10-05 – present
R.S. Schmeitz	(PhD 1)	Compute-Train-Learn 3D Printing	2023-11-01 – present
S.T. Torres Olivares	(PhD 3)	DEPMAT: Data Enhanced Physical models to reduce Materials use	2024-01-01 – present
M.S. Rezaie	(PhD 1)	Hydrogen Storage in Porous Materials for Energy Applications using Molecular Simulations	2021-09-01 – present
T.S. Feehilly	(PhD 1)	Modelling and multiscale design of active metemate-rial	2023-03-01 – present
T. Bertens	(PhD 1)	Towards particle generation on silicon wafers	2021-12-01 – present

T. Lenders	(PhD 3)	Mechanical behavior of composite materials under harsh conditions	2020-01-01 – present
A.A.B. IJzerman	(PhD 3)	Circular Photovoltaics	2024-01-10 – present
U.S. Malik	(PhD 3)	METRAMAT	2024-10-14 – present
X. Kuci	(PhD 2)	Dynamic metamaterials breaking through sub-wavelength application limits -SUBMETA-	2020-04-14 – present
Dynamics and Control			
A. Habboush	(PhD 3)	Learning in Motion (WP3): Hybrid physics-driven and data-driven Digital Twinning for control of web and handling in printing systems.	2023-09-01 – present
A. Subrahamanian Moosath	(PhD 3)	Hybrid and modular dynamic modeling of complex high-tech systems	2024-06-01 – present
B.M. Kessels	(PhD 2)	Autonomous updating of dynamic models for re-design of engineering systems	2020-05-01 – present
D. Passato	(PhD 2)	DYNAF	2021-07-01 – present
M.R. Mukherjee	(PhD 3)	Depth Sensitive Subsurface Nanoimaging	2020-11-01 – present
D.W.T. Alferink	(PhD 3)	Motion control of stages with dynamic links, a physics-guided approach	2023-03-20 – present
J.G. Hendrikx	(PhD 3)	Control for nanotube based profiling in AFM	2024-04-15 – present
K. Chen	(PhD 1)	Dynamic modeling and analysis of drilling systems	2022-09-01 – present
L.A.L. Janssen	(PhD 2)	Compositional framework for complexity management of multi-disciplinary digital twins	2020-03-01 – present
L. Poort	(PhD 3)	Model reduction in a modular framework: Model Reduction Framework for Structural Dynamics in High-tech Semiconductor Equipment	2020-11-01 – present
M.H. Herrmann	(PhD 1)	Total Lagrangian rod finite element formulation with non-smooth frictional contact	2024-09-01 – present
P. Mitterbach	(PhD 1)	Sectorplan	2022-01-10 – present
R.E.W.L. Thijssen	(PhD 3)	Design and modelling of complex damped interconnected systems.	2024-10-01 – present
V. Chaudhary	(PhD 3)	Atomic Force Microscopy: Simulation and Modeling	2024-10-08 – present

Z. Wang	(PhD 1)	PhD on designing a sensor network and thermal digital twin of an office building	2024-08-13 – present
Robotics			
B.W.B. Proper	(PhD 1)	ACD call	2022-05-09 – present
K.D. Kommuri	(PhD 1)	Smart materials in Haptic Interaction	2021-01-07 – present
L.C. van Laake	(PhD 3)	AMOLF	2021-11-15 – present
R.Q.M. de Queiroz Mendes	(PhD 1)	EAISI EMDAIR project I.Touch2See	2022-05-01 – present
S.T. Weerathunge	(PhD 1)	SMEAR-Soft Material Exploring Autonomous Robot	2023-04-01 – present

3. Postdocs

Mechanics of Materials

B.W. Werner	(PD 3)	Predicting fracture in 3D printed concrete beam lattice systems with the QuasiContinuum method for computational efficiency
J. Liu	(PD 3)	Additive manufacturing of polymer-derived ceramics with multiscale architectures
S.R. Sikundalapuram Ramesh	(PD 2)	Dynamic metamaterials breaking through subwavelength application limits
V. Rezazadeh	(PD 3)	Unraveling air entrapment during polymer thin film lamination
Z. Chang	(PD 1)	Numerical design and experimental investigation on magnetic metamaterials

4. Dissertations

Mechanics of Materials

A. Mohammadpour Shoorbakhlou, *Multi-Scale Physical Modeling of Failure in Cast Iron due to Thermo-Mechanical Fatigue*, 2024-02-02. Supervisors: Geers, M. G. D. (Promotor) & Kouznetsova, V. G. (Promotor).

R.F.M. Martens, *Novel Diagnostics to Assess Stress-Depth Profiles and Mechanics in Multi-Layer Thin Films*, 2024-12-19. Supervisors: Hoefnagels, J. P. M. (Promotor), Geers, M. G. D. (Promotor) & van der Sluis, O. (Copromotor).

S.O. Sperling, *A continuum-particle simulation framework for silicon scratching at the microscale*, 2024-04-18. Supervisors: Geers, M. G. D. (Promotor) & Hoefnagels, J. P. M. (Promotor).

Dynamics and Control

A. Amiri, *Low-order dynamic modeling for electroactive surfaces*, 2024-05-13. Supervisors: Lopez Arteaga, Ines, Promotor van de Wouw, Nathan, Promotor Broer, Dirk J., Copromotor.

A.G. Aribowo, *Dynamic Modeling and Performance Analysis of Rotary Drilling Systems with a Downhole Passive Regulator*, 2024-10-17. Supervisors: van de Wouw, Nathan, Promotor Detournay, Emmanuel M., Promotor .

L.A.L. Janssen, *Model Reduction and Redesign of Dynamical Systems: A Modular Framework*, 2024-06-19. Supervisors: van de Wouw, Nathan, Promotor Fey, Rob H.B., Promotor Besselink, B., Copromotor.

Microsystems
R. Sabahi Kaviani, *Development of Nervous System-on-Chip Technology*, 2024-01-17. Supervisors: Lüttge, Regina, Promotor den Toonder, Jaap M.J., Promotor.

5. Overview of research input and output Mechanical Engineering related to EM, 2024

Input

	Sources of financing[2]			Total	
	1	2	3	#	FTE
Senior academic staff[3]	30	0	0	30	9.7
PhD[4]	18	12	24	54	43.2
Postdoc[5]	1	1	3	5	4.0
Total	49	13	27	89	56.9

Output

	Total
Scientific publications: refereed journals	97
Scientific publications: books, chapters in book	6
Scientific publications: refereed proceedings	20
PhD theses	7

6. Bibliography

Journal articles

Aarab, M., Dorussen, B.J., Poelsma, S.S. and Remmers, J.J., *Development of optimal L-PBF process parameters using an accelerated discrete element simulation framework*, Granular Matter, **26(3)**, (no pages found) (2024). doi:10.1007/s10035-024-01432-4,

Agúndez, A.G., Saccon, A., García-Vallejo, D. and Freire, E., *Dynamic inversion and optimal tracking control on the ball-plate system based on a linearized nonholonomic multibody model*, Mechanism and Machine Theory, **203**, (no pages found) (2024). doi:10.1016/j.mechmachtheory.2024.105795,

[2](1): University; (2): NWO etc.; (3): Industry, TNO, EC-funds, etc.

[3]The standard EM input for staff members is 0.4 FTE. Researchers that are active in multiple graduate schools are counted for 50% in the EM input (0.2 FTE). The input is proportional with the appointment of the personnel at the affiliated group. The output of guest researchers, as indicated in the input table, is not included in the EM output.

[4]Research input for PhD per year: 0.8 FTE. The PhD research input is only to be included until 4 years after the appointment of the PhD candidate.

[5]Research input for PD per year: 0.8 FTE. The PD research input is only to be included until 2 years after the appointment of the PD researcher.

Andrien, A.R., Lefeber, E., Antunes, D.J. and Heemels, W.P., *Model Predictive Control for Quadcopters With Almost Global Trajectory Tracking Guarantees*, IEEE Transactions on Automatic Control, **69(8)**, pp. 5216-5230 (2024). doi:10.1109/TAC.2023.3349098,

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Arsuffi, B., Siqueira, G., Nyström, G., Titotto, S., Magrini, T. and Daraio, C., *Programmable Multi-Responsive Nanocellulose-Based Hydrogels With Embodied Logic*, Advanced Functional Materials, **34(51)**, (no pages found) (2024). doi:10.1002/adfm.202409864,

Börjesson, E., Verhoosel, C.V., Remmers, J.J. and Fagerström, M., *Meso-scale modelling of complex fibre composite geometries using an immersed boundary method*, Finite Elements in Analysis and Design, **242**, (no pages found) (2024). doi:10.1016/j.finel.2024.104262,

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Caasenbrood, B.J., Pogromsky, A.Y. and Nijmeijer, H., *Sorotoki: A Matlab Toolkit for Design, Modeling, and Control of Soft Robots*, IEEE Access, **12**, pp. 17604-17638 (2024). doi:10.1109/ACCESS.2024.3357351,

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Cui, Z., ul Islam, T., Wang, Y. and den Toonder, J.M., *Curved Surfaces Induce Metachronal Motion of Microscopic Magnetic Cilia*, ACS Applied Materials and Interfaces, **16(29)**, pp. 38733-38743 (2024). doi:10.1021/acsami.4c06884,

Dave, N., Fijen, M.J., Claassen, F., Schoenmakers, N.P., Massart, T.J., Geers, M.G. and Peerlings, R.H., *Accuracy of hygro-expansive curl predictions for paper sheets based on homogenised 2D and 3D network representations*, European Journal of Mechanics, A/Solids, **106**, (no pages found) (2024). doi:10.1016/j.euromechsol.2024.105339,

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8. University of Twente – Engineering Technology

1. Senior academic staff

Nonlinear Solid Mechanics		
prof.dr.ir. A.H. van den Boogaard	Full professor	0.40
C. Soyarslan	Associate professor	0.20
dr.ir. E.S. Perdahcioglu	Assistant professor	0.40
dr. A. Cometa	Assistant professor	0.32
dr.ir. J. Havinga	Assistant professor	0.32
dr. J. Hazrati Maragalou	Assistant professor	0.40
Applied Mechanics and Data Analysis		
prof.dr.-ing. B. Rosic	Full professor	0.40
dr.ir. R.G.K.M. Aarts	Associate professor	0.20
A. Berkhoff	Associate professor	0.40
M.H.M. Ellenbroek	Associate professor (visiting)	0.00
dr. A.R. Rege	Assistant professor	0.40
dr. A. Stanic	Assistant professor	0.40
A. Chatterjee	Assistant professor	0.40
dr. M.I. Abdul Rasheed	Assistant professor	0.40
dr.ir. J.P. Schilder	Assistant professor	0.40
Dynamics Based Maintenance		
prof.dr.ir. T. Tinga	Full professor	0.06
dr.ir. R. Loendersloot	Associate professor	0.40
dr.ir. A.A. Meghoe	Assistant professor	0.40
Production Technology		
L.E. Govaert	Full professor	0.40
prof.dr.ir. R. Akkerman	Full professor	0.40
dr.ir. T.C. Bor	Associate professor	0.40
dr.ir. W.J.B. Grouve	Assistant professor	0.40
M. Luckabauer	Assistant professor	0.40
dr.ir. L.L. Warnet	Assistant professor	0.40
Multi-scale Mechanics		
prof.dr.ir. H. Askes	Full professor	0.40
prof.dr. S. Luding	Full professor	0.20
prof.dr. A.R. Thornton	Full professor	0.20
dr. T. Weinhart	Associate professor	0.20
A. Ostanin	Assistant professor	0.20
Soil MicroMechanics		
dr. V. Magnanimo	Associate professor	0.40
dr. H. Cheng	Assistant professor	0.40
Computational Design of Structural Materials		
prof.dr.ir. I.M. Gitman	Full professor	0.40
dr. F.L. Liu	Assistant professor	0.40
Surface Technology and Tribology		
prof.dr.ir. M.B. de Rooij	Full professor	0.40
dr.-ing. N.F. Bader	Assistant professor	0.40
dr. T. Mishra	Assistant professor	0.40
dr. J.A. Osara	Assistant professor	0.40
dr. J. Seyyed Monfared Zanjani	Assistant professor	0.40
	Total FTE[1]:	13.10

[1]The standard EM input for staff members is 0.4 FTE. Researchers that are active in multiple graduate schools are

2. Running PhD-projects in 2024 related to research school EM

Nonlinear Solid Mechanics

A. Fallahnejad	(PhD 2)	Physically consistent data-driven constitutive models by machine learning	2023-06-01 – present
A.H. Hashemzadeh	(PhD 3)	Data driven modeling of lateral flow in the rolling of steel strip	2023-07-15 – present
A.R. Ray	(PhD 3)	A Micro-mechanical Model for Cutting and Electromagnetic Behavior Analysis of Electric Steel	2024-06-01 – present
F.M. Munzone	(PhD 2)	Automated Model Updating of Digital Twins	2022-09-01 – present
S.A. Nchimbi	(PhD 1)	Advancing FEM in non-linear solid mechanics using machine learning	2024-11-15 – present
S. Rathore	(PhD 3)	Failure analysis in wall ironing of cans and batteries	2022-02-01 – present
S. Younas	(PhD 2)	Inline Hybrid Modelling in Cold Rolling and Forming	2023-12-01 – present
T.P. Posthumus	(PhD 2)	GGS: control of metal forming processes	2024-12-01 – present
V. Blümer	(PhD 1)	Computational Modelling in the Determination of Structure-Property Relation of Additively Manufactured Products	2022-09-01 – present

Applied Mechanics and Data Analysis

J. van Tiggelen	(PhD 1)	Forced vibrations of system assemblies: An unsolved challenge	2023-01-01 – present
J.C. Schönthaler	(PhD 3)	Failure criteria and residual life analysis of composite structures subjected to vibration fatigue	2023-03-01 – present
K.L. Voorthuizen	(PhD 1)	Additive manufacturing of concrete using multi-robots	2022-01-15 – present
M.M. Fernhout	(PhD 2)	Battery thermal management using physics-informed machine learning	2023-11-01 – present
M.W. Berghuis	(PhD 1)	Real time digital twinning of soft robotics octopus like hand	2021-06-01 – present
R. Haasjes	(PhD 3)	Suppression of reflections in an acoustic anechoic chamber using active control	2020-11-24 – present
R.S. Sharma	(PhD 1)	Multiscale modelling of rubber - silica aerogel composites	2024-12-01 – present
T. Gödde	(PhD 3)	INNOVATE project	2022-03-10 – present

counted for 50% in the EM input (0.2 FTE). The input is proportional with the appointment of the personnel at the affiliated group. The output of guest researchers, as indicated in the input table, is not included in the EM output.

V.A. Arnaoutis	(PhD 3)	Parametric Design Optimization with Expert knowledge	2020-01-01 – present
W.J. Schuttert	(PhD 2)	Robust process control for fusion bonding of thermoplastic composites	2023-05-01 – present
W. van Dijk	(PhD 1)	Online physics-based machine learning algorithms for the control of precision robotic systems	2020-01-01 – present
Dynamics Based Maintenance			
E.E. Rouwhorst	(PhD 2)	Applying nonlinear acoustics for detection and assessment of PVC water mains	2023-10-10 – present
L.J. Arellano Ortega	(PhD 2)	AmmoniaDrive	2023-09-01 – present
L.S. Keizers	(PhD 2)	Hybrid Prognostics for Predictive Maintenance	2020-07-01 – present
N. Ribeiro Marinho	(PhD 2)	PrimaVera (Predictive maintenance for Very effective asset management)	2022-01-01 – present
S.B. Bruinsma	(PhD 3)	Machine Learning in Condition Based Maintenance	2021-02-01 – present
Production Technology			
D. Brands	(PhD 2)	Press forming without defects	2020-02-01 – present
F.F. Visser	(PhD 3)	Optimised fibre and matrix treatment	2022-10-03 – present
G. Bieleman	(PhD 2)	ENLIGHTEN-Enabling Integrated Lightweight Structures In High Volumes	2022-07-01 – present
H. Subramani Palanisamy	(PhD 1)	Fraunhofer Innovation Platform at the University of Twente	2021-04-15 – present
J.S. Simon	(PhD 3)	Improvement of leading edge protection systems for wind turbine blades	2023-02-01 – present
M. Gurian	(PhD 3)	Residual stresses in fusion-bonded thermoplastic composites	2022-04-01 – present
M.R. Gongati	(PhD 3)	Residual Stress Development during the fusion bonding of thermoplastic composites.	2023-08-01 – present
M.M. Bos	(PhD 3)	Simulation of hot gas welding of thermoplastic composite T-joints	2024-09-09 – present
M. Azizian	(PhD 1)	Out-of-Autoclave Consolidation using Induction Heated Tooling	2024-07-01 – present
E.R. Pierik	(PhD 2)	PERFECT: press forming without defects	2020-01-05 – present
S. Bentalib	(PhD 2)	ENLIGHTEN	2022-04-01 – present
S. Sayyad Rezaeinejad	(PhD 1)	Solid-state additive manufacturing of high-strength aluminum alloys through FSEAM	2022-07-01 – present

T.J. Asijee	(PhD 3)	Laser Assisted Fiber Placement with In-Situ Consolidation	2021-10-01 – present
Multi-scale Mechanics			
K.D. Deng	(PhD 3)	MIDAS - Modeling Irreversible Deformations of Athermal Structures	2024-01-10 – present
M. Winkelmann	(PhD 3)	Fundamental development of structure- and rotation-related coarse graining for micro-polar continuum theories	2021-09-01 – present
S. Mahdavy	(PhD 3)	Design of a digital framework for upscaled particle calibration with powder characterization techniques	2024-01-09 – present
Soil MicroMechanics			
M.R. Mishra	(PhD 3)	Understanding the influence of grain morphology and mesostructure on the initiation and runout of submarine landslides	2024-10-01 – present
R. Lubbe	(PhD 1)	Continuum–DEM modelling of fluid–solid transition in weakly compacted systems of polydisperse particles of varying shapes	2022-06-09 – present
R. Saghafian Larijani	(PhD 3)	Meso-scale description of wet powders for industrial scale modelling	2021-09-01 – present
S.J. Joseph	(PhD 1)	Noise and Vibration in wet soil: Strategies for smart mitigation measures	2022-06-09 – present
Computational Design of Structural Materials			
E. Karaseva	(PhD 1)	Multiscale analysis of polymer composites using multigrid method	2021-11-01 – present
N.N. Nazemzadeh	(PhD 1)	Modelling of Recycled Fibre Reinforced Polymer Composites	2022-07-01 – present
Surface Technology and Tribology			
A. Adelinia	(PhD 1)	Interface Optimization in Metal-Thermoplastic Hybrid Joints	2021-08-01 – present
F. Jalalimoghadas	(PhD 3)	Multi scale modeling of friction in aluminum sheet forming	2021-11-01 – present
K.K. Shrestha	(PhD 3)	Roughness change in lubricated cam follower contact	2023-12-01 – present
M. Jaran	(PhD 2)	Scaling Friction from Single Grain to Aggregate Grain (fault-gouge) Contacts	2022-09-15 – present

M. Gargourimotlagh	(PhD 3)	Multi-scale friction modeling in the mixed lubrication regime with application to aluminum forming process	2020-12-01 – present
O.A.H. Allan	(PhD 2)	Degradation mechanisms in high performance rope structures	2021-08-01 – present
S.S. Gamaniel	(PhD 1)	Design of a biomimetic tongue for astringency assessment of plant-based proteins	2022-11-28 – present
S. Sharma	(PhD 3)	Degradation and Lubrication mechanism of stern tube seals	2022-06-01 – present
S.A.A. Alfath	(PhD 2)	Micro-mechanics of dynamic friction in a single-grain contact.	2024-09-01 – present
Z. Ranjbar Nouri	(PhD 3)	Hard chrome plating in cold rolling	2021-11-01 – present

3. Postdocs

Nonlinear Solid Mechanics

B.H. Alheit	(PD 2)	Microstructure estimation with electromagnetic sensing
B. Nijhuis	(PD 1)	Repurposing of steel by in-depth understanding of microstructure-property relations
H. Aghajani Derazkola	(PD 3)	A micro-mechanical model for roughness transfer in cold rolling of steel strips

4. Dissertations

Nonlinear Solid Mechanics

S.S. Mirhosseini, *Modeling the Effect of Retained Austenite in Forming of TRIP-Aided Dual Phase Steel*, 2024-06-12. Supervisors: van den Boogaard, Ton, Supervisor Atzema, Eisso H., Co-Supervisor.

Dynamics Based Maintenance

N. Mostafa, *Utilizing the system instantaneous frequency for the structural health monitoring of bridges*, 2024-04-26. Supervisors: Tinga, Tiedo, Supervisor Loendersloot, Richard, Co-Supervisor Di Maio, Dario, Co-Supervisor.

Production Technology

A.N. Vu, *Accurate overbraiding simulations for complex mandrels: On the role of yarn interactions*, 2024-05-29. Supervisors: Akkerman, R., Supervisor Grouve, Wouter J.B., Co-Supervisor.

E.R. Pierik, *Transient ply-ply friction of unidirectional thermoplastic composites in melt*, 2024-11-01. Supervisors: Akkerman, R., Supervisor Grouve, Wouter J.B., Co-Supervisor.

Multi-scale Mechanics

M.Y. Shaheen, *Numerical and Experimental Studies of Laser Powder Bed Fusion Processes*, 2024-05-31. Supervisors: Weinhart, T. , Supervisor Luding, S. , Supervisor Thornton, A.R. Supervisor Vaneker, Thomas H.J., Co-Supervisor.

5. Overview of research input and output Engineering Technology related to EM, 2024

Input

	Sources of financing[2]			Total	
	1	2	3	#	FTE
Senior academic staff[3]	38	0	0	38	13.1
PhD[4]	16	17	24	57	45.6
Postdoc[5]	1	1	1	3	2.4
Total	55	18	25	98	61.1

Output

	Total
Scientific publications: refereed journals	78
Scientific publications: books, chapters in book	7
Scientific publications: refereed proceedings	16
PhD theses	5

6. Bibliography

Journal articles

Abuzayed, I.H., Ozdemir, Z. and Askes, H., *Time domain homogenisation of elastic and viscoelastic metamaterials*, Mechanics of Time-Dependent Materials, **28(2)**, pp. 381-399 (2024). doi:10.1007/s11043-022-09567-8,

Alvarez, J.E., Cheng, H., Luding, S. and Weinhart, T., *Densification of visco-elastic powders during free and pressure-assisted sintering*, International Journal of Solids and Structures, **294**, (no pages found) (2024). doi:10.1016/j.ijsolstr.2024.112786,

Alvarez, J.E., Nijkamp, A.H., Cheng, H., Luding, S. and Weinhart, T., *Contact rheological DEM model for visco-elastic powders during laser sintering*, Granular Matter, **26(2)**, (no pages found) (2024). doi:10.1007/s10035-024-01395-6,

Amoroso, P., van Ostayen, R.A. and de Rooij, M.B., *Replicating the rolling-sliding dynamics of cam-roller contacts in large-scale hydraulic drivetrains: A small-scale approach*, Proceedings of the Institution of Mechanical Engineers, Part J: Journal of Engineering Tribology, **238(8)**, pp. 971-987 (2024). doi:10.1177/13506501241242185,

[2](1): University; (2): NWO etc.; (3): Industry, TNO, EC-funds, etc.

[3]The standard EM input for staff members is 0.4 FTE. Researchers that are active in multiple graduate schools are counted for 50% in the EM input (0.2 FTE). The input is proportional with the appointment of the personnel at the affiliated group. The output of guest researchers, as indicated in the input table, is not included in the EM output.

[4]Research input for PhD per year: 0.8 FTE. The PhD research input is only to be included until 4 years after the appointment of the PhD candidate.

[5]Research input for PD per year: 0.8 FTE. The PD research input is only to be included until 2 years after the appointment of the PD researcher.

Amoroso, P., van Ostayen, R.A. and de Rooij, M.B., *Rolling pairs with shifting contact geometry: Design, development, and validation*, Proceedings of the Institution of Mechanical Engineers, Part J: Journal of Engineering Tribology, **238(8)**, pp. 912-928 (2024). doi:10.1177/13506501241239490,

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