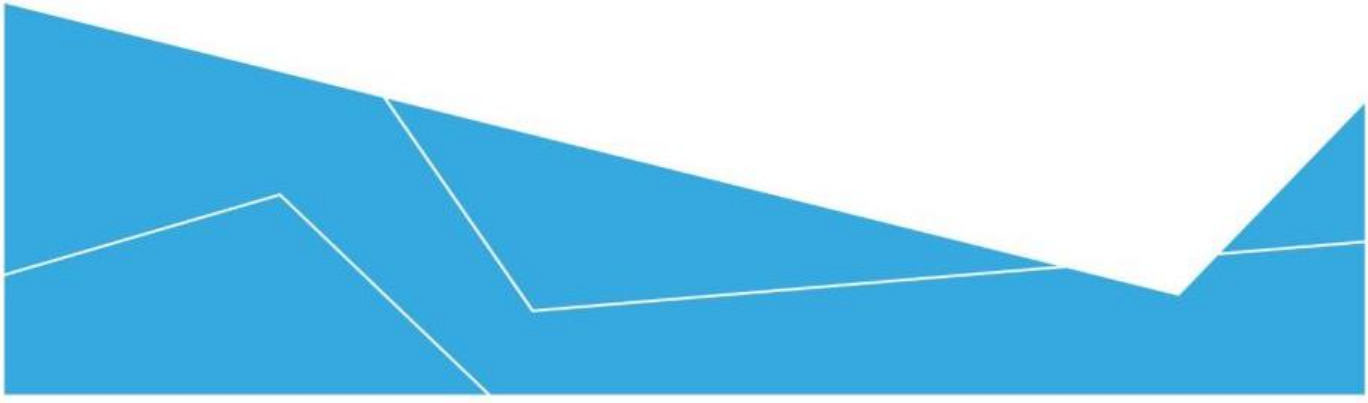
Report EUSMAT 2021



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Foreword

The European School of Materials – EUSMAT – was founded in 2008 in order to bundle the international activities of the Department of Materials Science and Engineering (MSE) at Saarland University. This created synergies among the different projects, optimized their management and helped in developing new innovative supporting activities. Since its foundation, EUSMAT has established itself as an important internationalisation factor for the Department of MSE and increased its visibility significantly.

This report will focus on the current situation of EUMAT describing in detail the projects which are currently active. However, it also intends to summarize all activities since the foundation of EUSMAT, providing valuable statistics in order to assess the total contribution of this scientific unit of the Faculty NT.

In 2012, EUSMAT was very positively evaluated by the dean office of the Faculty NT taking into consideration external assessments done through feedback questionnaires for students as well as external experts. Since then, EUSMAT has continuously expanded its international study and research programmes and worked extensively on providing a framework to maintain and develop these programmes. This work includes supporting the social competencies of programme participants through intercultural and multilingual trainings as well as a meticulous follow-up of alumni activities and networking offers. Such activities are evaluated regularly in order to ensure continuous improvement of the programmes. Implementing these improvements, presupposes a continuous further qualification of the team members. All in all, the above approach allowed us to develop a life-long learning concept which is being applied across the different programmes and constitutes an added value for all participants and a point of distinction for EUSMAT.

Further efforts were also given to public relations measures and marketing. These are done mainly through the organization's own homepage, social networks, where EUSMAT is very present, as well as different press releases and technical articles. Here, the article about our Professional Summer School included in the HRK-Expertise manual 2020 of the German Rectors' Conference can be mentioned as a highlight. Such measures have not only the goal of attracting more students to our programmes, but also increasing the visibility of EUSMAT and the department of Materials Science and Engineering.

Finally, interaction with other units of the faculty and other units of the university are considered a key factor for the success of EUSMAT. Efficient and productive relationships with the International Office and the Welcome Centre, the Education and Quality Resort of the university, the Dean Office of the faculty and GradUS – the graduate programme - can be mentioned as examples. EUSMAT is also presented with excellent opportunities for expansion and enhancement through projects such as its involvement in the university-wide initiatives CIRKLA – Center for Materials and Metals in a Circular Economy and 'Transform4Europe', the European University for Knowledge Entrepreneurs, which have just started, as well as the project NFDI-MatWerk - National Research Data Infrastructure for Materials Science & Engineering – MSE, that has just received a grant by the DFG and in which the department of MSE is a main partner.

1. About us

1.1. Organizational structure

The European School of Materials is composed of different working units: **the board of directors** represents EUSMAT and gives directives for its further development. Every board member is responsible for specific programmes. The **EUSMAT Office team** is coordinated by general managers and manages the programmes as well as the exchange and research projects whereas the **technical project officers** are in charge of academic matters of defined programmes.

1.2. Board of Directors

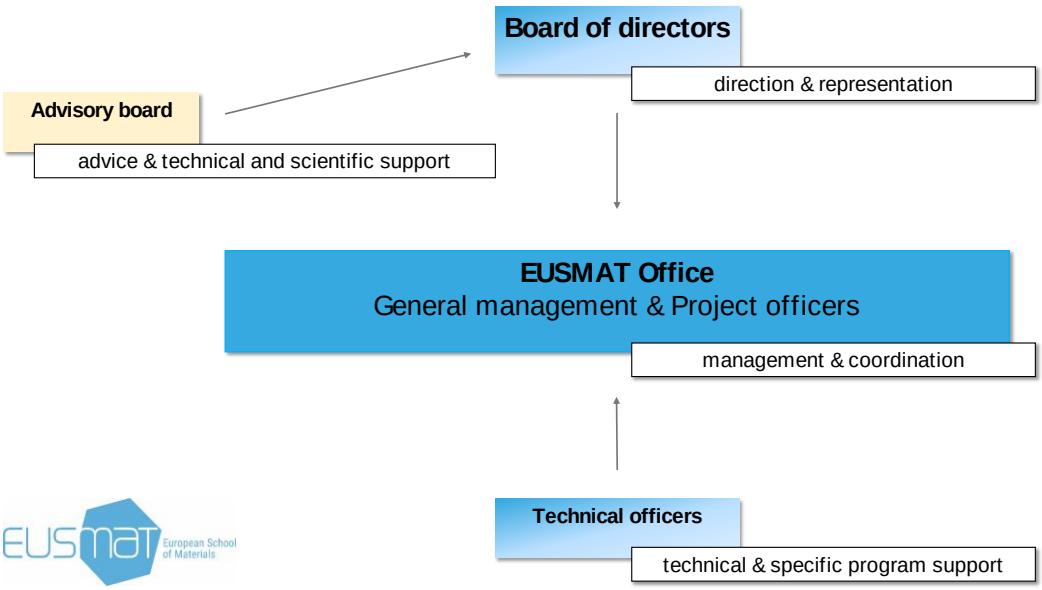

Fig. 1: Organizational structure

EUSMAT has a board of directors consisting of three university professors of the department for Materials Science and Engineering:

Prof. Dr.-Ing. F. Mücklich

Chairman of the board

Coordinator AMASE, DocMASE and PhD-Track

Prof. Dr.-Ing. D. Bähre

Coordinator EEIGM

Coordinator industrial partnerships

Prof. Dr. rer. nat. R. Busch

Coordinator Transatlantic Bachelor *Atlantis*

The tasks of the board of directors are as follows:

1) Strategic planning of international activities such as collaborations with universities and research institutions in Europe and in countries worldwide, exchange of students, PhD students, scientists and researchers.
2) Coordination of the international programmes of the department and members of the corresponding international steering committees.
3) Planning and organization of collaboration with industry representatives.
4) Exchange with professors of the department about the activities and goals of EUSMAT.
5) Coordination and planning of public relations activities such as the presentation of EUSMAT in general and of the individual study and exchange programmes in particular.
6) Stimulation and promotion of new answers to calls of proposal, e.g. for funding programmes of the European Union.

1.3. EUSMAT Office

The daily business of EUSMAT is managed by a team of people with different professional backgrounds. The staff is mainly financed by overhead funds of the different projects, except the position of the managing director which is funded by the department of MSE.

Currently, the following persons are part of the EUSMAT office:

Dr.-Ing. Flavio Soldera
Managing director
Coordinator I.DEAR
Since 02/2008

Dr. phil. Claudia Heß
Deputy managing director
Head of Transversal Skills & Francophone Cooperation
Since 09/2013

Manja König
International Project Manager
& Content Manager
Since 03/2021 (before Assistant Project Manager 07/2015 – 09/2016)

Stephanie Barbian
Trainee, Office Management
08/2019 – 06/2021

Paulina Morales
Assistant Project Manager, Homepage
Since 10/2020

Shakawat Ahmmednobin
IT, Programmer Data Bases
Since 03/2018

Antonios Gkiokoutai
IT
Since 01/2020

The tasks of each member of the EUSMAT office are as follows:

Dr.-Ing. Flavio Soldera, Managing Director

- General management of EUSMAT (staff, finances, PR)
- Management of the applications for the funding of study and research projects, e.g. *Erasmus Mundus*, Interreg, DFH-UFA, DAHZ-CUAA, DAAD
- Management of project finances and reporting activities
- General coordination of international study programmes, in particular support of students in academic and day-to-day matters, coordination with cooperation partners on the management of the programmes, cooperation with the examination office and the division for Education and Quality Assurance to regulate the programmes (e.g. drafting examination and study regulations)
- Coordinator of the I.DEAR-Materials programme
- Creation, organization, management and moderation of events such as alumni meetings and summer schools
- Erasmus+ coordination for incoming and outgoing students of the department
- Contact person for foreign universities which want to cooperate with the UdS in the field of Materials Science and Engineering
- Research activities in the field of materials characterization and development in cooperation with international doctorates and international research partners. Organization of technical symposia at international conferences and summer schools
- Support and advice for administrative issues related to international doctorates, in particular doctoral activities in co-tutelle with international partners.
- Since February 2012 member of the Young Talents committee and since 2013 member of the executive committee of the Regional Group Saar of the German Materials Society (DGM e.V.). In these committees, supporting networking and education measures for young talents in MSE as well as discussing and organizing networking activities with the regional industries.
- Member of the faculty council of the Faculty NT and of the internationalisation committee of the university.

Dr. phil. Claudia Heß, Deputy Managing Director

- General management of EUSMAT (staff, finances, PR)
- Management of applications to calls for projects as well as of reports, e.g. *Erasmus Mundus*, Interreg, DFH-UFA, DAAD
- Management of project finances.
- General coordination of international study programmes, in particular those with a francophone background (e.g. PhD-Track financed by the Franco-German University). Advice and supervision of students in the EUSMAT programmes.
- Head of transversal skills, i.e. management, organisation and recognition of the transversal skill contents in EUSMAT study programmes. Transversal skills include courses about intercultural communication, presentation techniques, software knowledge for engineers, science communication, giving poster presentations, etc.
- Planning and teaching courses on different topics of intercultural communication for incoming and outgoing students in different EUSMAT study programmes (AMASE, I.DEAR, ATLANTIS, EEIGM, DocMASE) as well as in the UdS Bachelor Materials Science and Engineering
- Planning, organisation and management of different EUSMAT events such as the Integration week, the Professional Summer School (AMASE) and Alumni Meetings (all EUSMAT programmes),

- Scientific work (papers, presentation in conferences, collaborations) in the fields of intercultural communication for STEM, good practice of international study and research programmes, life-long-learning and career preparation for STEM students in international study programmes
- Erasmus + coordination for incoming and outgoing students
- Moderation of different EUSMAT events and events at Saarland University (e.g. international Alumni meeting at UdS)
- Contact person for collaborations within Saarland University in the field of international study and research activities for STEM
- EUSMAT Alumni management and future responsible person for the coming database and homepage for international EUSMAT Alumni work
- Management of study programme and event evaluations as well as evaluations in the field of career preparation for students in STEM programmes
- Homepage maintenance

Manja König, M.A., International Project Manager & Content Manager

- General support for international students of all EUSMAT programmes. Support and advice on practical issues related to studies, visa, housing, and enrolment.
- Internal and external communication with partner universities about admissions, changes in university choice, student illness
- Creation of informational materials for international students, such as the Student Guide (University Guide), which is revised annually for the new students of the Master's programme AMASE and contains all the important information about the studies and the partner universities.
- Recording and administration of student data in a special database
- Updating the EU database: Since the AMASE programme is funded by Erasmus Mundus, all participants of the programme have to be registered in the EU database. For this purpose, a regular reconciliation of the examination results achieved, as well as a check of the funds already paid, is necessary.
- Support in the preparation of applications, e.g. new applications for Erasmus Mundus funding, applications to the DAAD, the German-French University and other funding bodies
- Teaching of modules on intercultural competence as part of the annual Integration Week and the Professional Summer School of the AMASE study programme
- Strategic planning and implementation of all press and public relations activities
- Procurement of image and text rights
- Writing texts and publications for different media as well as press releases for the local and, if applicable, international press
- Further development and implementation of a marketing and social media strategy as well as editing and maintenance of the social media presence including advertising campaigns
- Design and procurement of suitable marketing materials such as flyers, brochures and posters
- Participation in and implementation of events (open house, alumni meetings) and trade fair visits

Stephanie Barbian, Trainee

- Office management, invoice processing, reimbursement of student fees
- Database maintenance for the application procedure in the different study programmes

- E-Mail, letter and telephone communication with international students, PhD-students, cooperation partners and different administration offices at Saarland University
- Management of international events, such as Integration Week and Professional Summer School of AMASE, EUSMAT Alumni meetings, and DocMASE summer schools. This includes booking suitable premises, obtaining offers for leisure activities and excursions and organisation and planning of various seminars and lectures within a series of events.
- Creation of admission documents for the intake of new students

Paulina Morales, B.A. student assistant

- Supporting administrative tasks
- Creating and uploading posts for the social media channels
- Editing and updating the AMASE Student Guide
- Editing and maintenance of homepage
- Training the virtual assistant (chatbot) of the homepage.
- Miscellaneous tasks to support the team such as short translations, managing databases, writing reports, proofreading files, etc.
- Updating the AMASE evaluation survey

Shakhawat Ahmmed Nobin, B.Sc., student assistant

- Programming and technical support of the EUSMAT databases which are used for the organisation of the applications, the recording and exchange of credits among the universities, delivery of degrees and the organisation of events.

Antonios Gkiokoutai, student assistant

- Server management, technical support hardware.

1.4. Technical Project Officers

Technical officers are members of the different chairs at the department of Materials Science that collaborate with the EUSMAT office in order to manage the different projects from the technical/academic point of view. Currently, the following technical offices are active in the different programmes:

Dr. rer nat. Isabella Gallino

Atlantis Bachelor Programme

Franziska Herter, M.Sc.

EEIGM Bachelor & Master Programme

Dr.-Ing. Sebastián Suarez

International Research Programmes (e.g. SUMMA2, CREATe-Network)

1.5. Former members of the EUSMAT team and technical project officers

One main goal of EUSMAT is to contribute to the qualification of young students and co-workers not only in the technical field of Materials Science and Engineering, but also in all aspects related to the activities of EUSMAT (management of international programmes, intercultural and complementary skills, international marketing activities, international cooperation, etc.). EUSMAT acted and still acts as a platform for the further development of its former co-workers, opening new career possibilities for them. Most of the co-workers were student and research assistants. On one side this contributes significantly to the qualification of young professionals. On the other side, this causes a strong fluctuation of team members which leads to a decrease in efficiency in the daily work for EUSMAT.

1.6. Advisory Board

EUSMAT funding includes capacity for an advisory board. The advisory board provides technical and scientific support, in particular for the exchange with the regional industry, the international partners and other university units. The advisory board should include the president of the university, representatives of the industry, representatives of partner universities and students.

Since EUSMAT has different events in which an intense exchange with these parties is promoted, it was decided not to organize additional meetings with an advisory board. Such events are:

- The meetings of the Executive Board of the DGM-Regionalforum (Regional Group of the German Society of Materials): the board meets twice a year and is made up of professors of the department, the Fraunhofer Institute IZfP, the Leibniz Institute for New Materials, students of the department and, currently, representatives of 9 companies.
- The meetings of the Steering Committee of AMASE with representatives of the industry participating in the Professional Summer School, which takes place once a year.

In these meetings, the activities of EUSMAT are presented and discussed among the participants, receiving important feedback and suggestions for the further development of the activities. In particular, aspects such as "employability", internship opportunities as well as required qualifications for working in industry are discussed in detail.

2. Finances

The activities of EUSMAT are fully financed by third-party funding, with exception of the salary of the Managing Director which is covered by the Department of Materials Science and Engineering. Therefore, in order to ensure the financing of the study and research programmes, as well as the different activities, EUSMAT is committed to acquiring third-party funding.

The main funding sources are the European Commission (e. g. Erasmus Mundus programme, Horizon 2020 and INTERREG), the German Academic Exchange Service – DAAD (e. g. Alumni-Meetings), the Franco-German University – DFH (e. g. PhD-Track) and the German-Argentinean University Center (DAHZ). Further important income comes from the participation costs paid by AMASE students to the consortium.

From 2005, the total income through third-party funding amounts to **19.425.045,48 €**, as can be seen in table 1. Additionally, already approved projects for the next years will make a further **4.017.537 €** to EUSMAT. Figure 2 and table 1 present the yearly income and expenditure. Even though EUSMAT was founded in 2008, the data is presented from 2005 onwards, including third-party funding of the programme AMASE that started in that year. Some large differences in the incomes in contiguous years are

due to the payments done by the corresponding financing institution being concentrated in a single year even though the corresponding amount may be spent over several years.

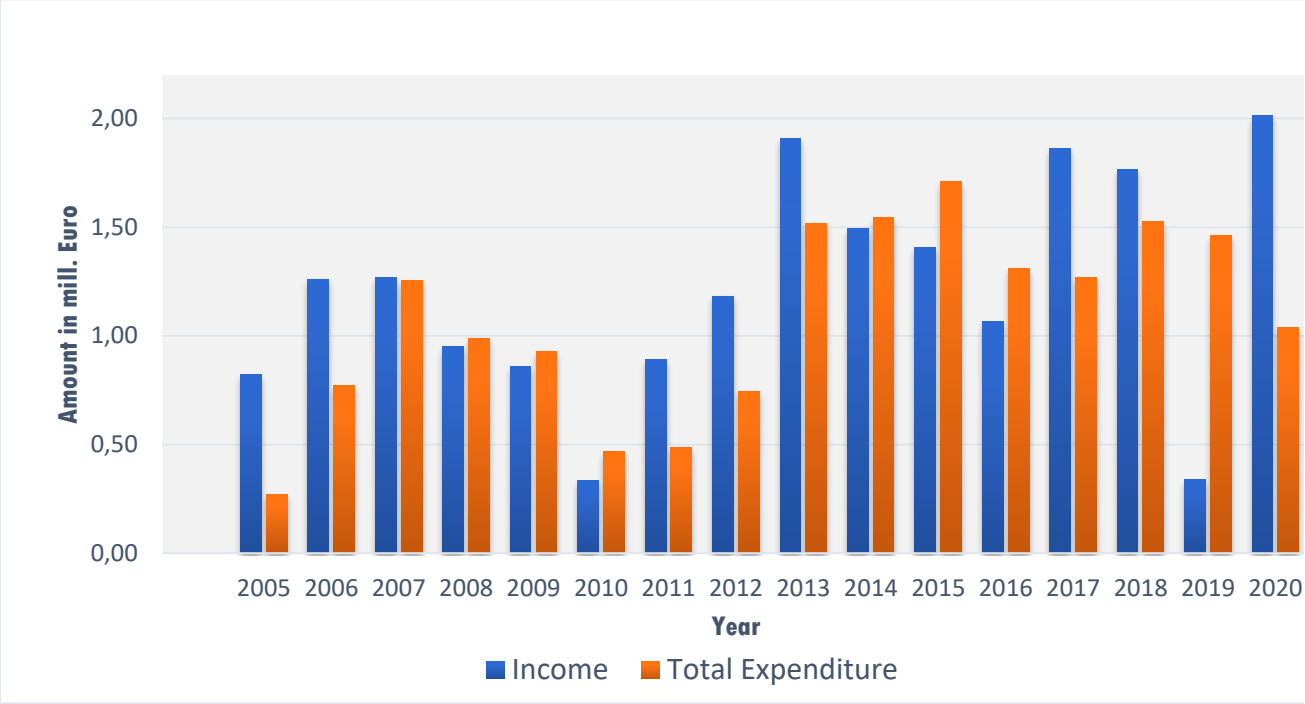

Fig. 2: Income (third-party funding) and expenditure of EUSMAT

The expenditure is divided into four different categories in figure 3:

- Transfer to partners: for several projects, EUSMAT acts as the coordinator, i.e. the funding is collected by EUSMAT but some parts are transferred to the partners. In case EUSMAT is not the coordinator, only the income granted to EUSMAT is considered in the statistics.
- Personnel costs: this item corresponds to the salaries of the people working at the EUSMAT office, including student assistants.
- Administrative/Material costs: includes all expenditures related to the office work (office material, software licences, hardware, etc.), the organization of events, travel and hosting costs, participation in conferences, contracting of external experts, etc.
- Scholarships/Researchers salaries: since supporting students and researchers is one of the main goals of EUSMAT, this item represents the highest expenditure and includes scholarships for master and doctoral students as well as salaries of doctoral students.

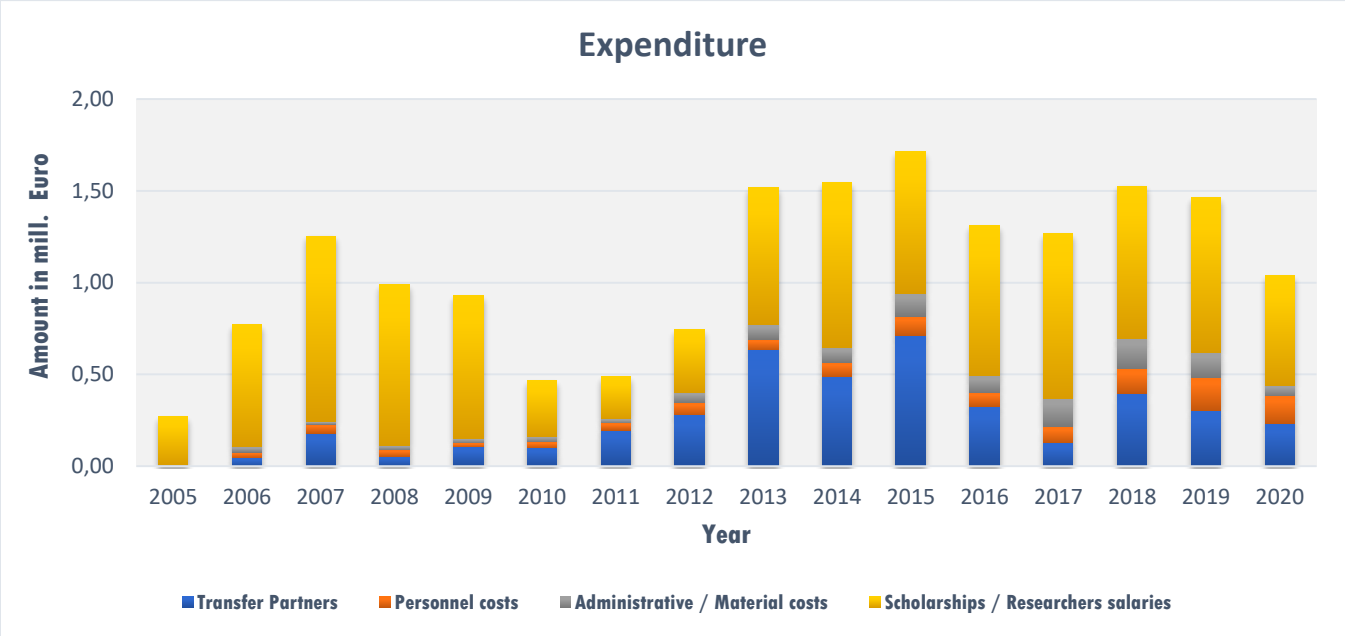

Fig. 3: EUSMAT expenditure from 2005 to 2020 partitioned into 1) transfer to partners, 2) personnel costs, 3) administrative and materials costs, and 4) scholarships and researchers' salaries.

Details of the expenditure of third-party funding of EUSMAT are described in table 1. The list of all EUSMAT projects are described in the Annex.

Year	Income	Total Expenditure	Detail of Expenditure			
			Transfer Partners	Personnel costs	Administrative / Material costs	Scholarships / Researchers salaries
2005	821.050,00 €	270.729,87 €	0,00 €	0,00 €	8.829,87 €	261.900,00 €
2006	1.260.802,00 €	772.615,29 €	44.969,06 €	31.265,83 €	28.127,40 €	668.253,00 €
2007	1.269.547,26 €	1.253.266,70 €	179.151,00 €	48.789,82 €	13.812,15 €	1.011.513,73 €
2008	950.456,35 €	988.622,24 €	53.226,00 €	35.972,15 €	22.955,09 €	876.469,00 €
2009	859.698,80 €	927.406,00 €	105.378,00 €	21.507,86 €	25.046,14 €	775.474,00 €
2010	334.346,00 €	466.983,08 €	100.100,00 €	32.181,76 €	29.704,32 €	304.997,00 €
2011	889.583,00 €	487.028,46 €	194.569,63 €	41.571,62 €	22.805,53 €	228.081,68 €
2012	1.183.384,00 €	744.645,56 €	279.500,00 €	67.578,04 €	55.387,75 €	342.179,77 €
2013	1.906.173,81 €	1.518.186,38 €	632.374,00 €	60.552,37 €	77.152,02 €	748.107,99 €
2014	1.494.893,80 €	1.544.990,03 €	488.200,00 €	77.987,32 €	80.014,83 €	898.787,88 €
2015	1.406.806,86 €	1.711.851,13 €	711.566,73 €	105.121,20 €	127.328,33 €	767.834,87 €
2016	1.066.790,41 €	1.311.096,44 €	325.752,00 €	76.761,97 €	89.272,90 €	819.309,57 €
2017	1.862.097,24 €	1.267.429,96 €	128.061,60 €	89.843,31 €	148.850,45 €	900.674,60 €
2018	1.766.376,37 €	1.525.589,36 €	398.033,02 €	131.748,53 €	165.992,34 €	829.815,47 €
2019	339.774,81 €	1.461.731,50 €	305.404,93 €	177.078,60 €	137.750,37 €	841.497,60 €
2020	2.013.264,77 €	1.038.621,19 €	230.388,93 €	152.575,94 €	58.226,91 €	597.429,41 €
Sum	**19.425.045,48 €**	**17.290.793,19 €**	**4.176.674,90 €**	**1.150.536,32 €**	**1.091.256,40 €**	**10.872.325,57 €**

Table 1: Expenditure details for third party funding of EUSMAT

3. Mission and Goals

The mission of EUSMAT is to support the education and qualification of national and international students of the Saarland University in the field of Materials Science and Engineering. EUSMAT cooperates with university and university-affiliated institutions, other universities, research institutions and industry in Germany and abroad.

In the field of international education EUSMAT's particular goals are:

- The development and the maintenance of an international network in research and education
- The steering, systematic support and coordination of joint applications for international bachelor's, master's and doctoral programs as well as other accompanying funding measures.

In the area of qualification, EUSMAT's goals are in particular:

- The establishment and the maintenance of networks with industrial partners
- The qualification of internationally deployable executives
- The continuous education of students even beyond the study or exchange period at EUSMAT partners.

3.1. International study and exchange programmes

3.1.1. Erasmus Mundus Joint Master Programme in Advanced Materials Science and Engineering (AMASE)

www.amase-master.net

The national master's programme in Materials Science and Engineering in Saarbrücken aims to provide a research-oriented education and scientific specialisation in the field. Over the course of the programme, methodological techniques of material characterisation, modelling and simulation are deepened and complemented by an extended consideration of material-specific properties and processing technologies.

The two-year AMASE programme is an international master's programme offered by the following universities:

- *Universität des Saarlandes* (Germany, Coordinator)
- *Université de Lorraine*, Nancy (France)
- *Universitat Politècnica de Catalunya Barcelonatec*, Barcelona (Spain)
- *Luleå Tekniska Universitet, Luleå (Sweden)*
- *Montanuniversität Leoben (Austria)*
- *Università degli Studi di Padova (Italy)*

Montanuniversität Leoben and the Università degli Studi di Padova joined the consortium in 2021, expanding the geographical sphere of EUSMAT. MUL provides expertise in the value-added life cycle of materials while UNIPD has strong connections to industry. AMASE students study at two of the programme's universities and receive a master's degree from each university at the end of their studies. This means they graduate with a double degree.

AMASE was founded in 2005 and financially supported by the Erasmus Mundus programme of the EU until 2009. The 2010 and 2011 course editions continued without financial support from the European Commission, but under the Erasmus Mundus Brand Name (EMBN).

In 2011, 2016 and 2020 - after one year without funding in 2019 - the program was again successful with corresponding applications to the European Commission's programme. The financial support in the form of scholarships, administrative funds and funding for guest lectures was secured for further cohorts.

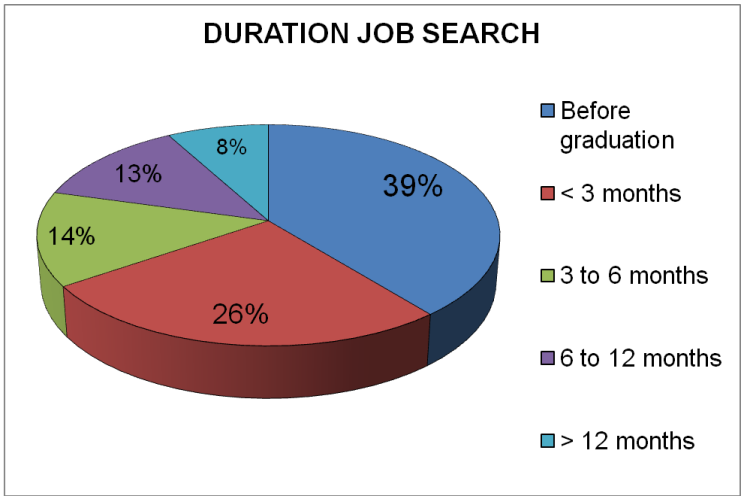

Fig. 4: AMASE alumni duration of job search

Since 2005, 3675 candidates have applied for AMASE, 380 have participated in the programme (among them 244 with an Erasmus Mundus scholarship) and 302 students have already graduated. Out of these students, 190 have studied and 147 have graduated at the UdS. Up to now, AMASE students come from 48 different countries, spread over all continents. In total, the programme has received around 16 Million € of funding from the European Commission.

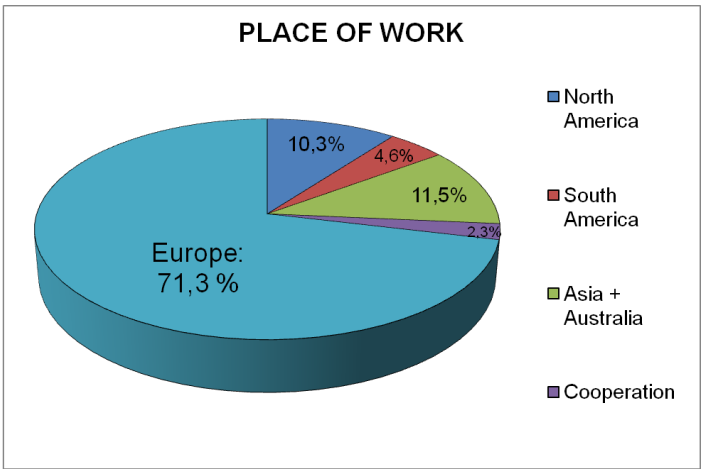

Fig. 5: AMASE alumni place of work

In 2016, an alumni survey with 92 participants who studied AMASE between 2005 and 2013 was carried out. It showed that two out of three AMASE alumni find a job before graduating or within the first three months after graduating. The vast majority of alumni currently works in Europe. The programme countries (in 2016 Germany, Spain, France and Sweden) are very attractive for our alumni.

With the extension of the AMASE consortium in 2021, the study structure was updated. A transversal skills module (15 CP) replaced the previous module dedicated to language knowledge and intercultural skills (12 CP). It was integrated in response to the growing demand of employers searching for specific non technical skills of graduates. Besides language courses, intercultural trainings, the participation in the Integration Week and the Professional Summer School, which were part of the past editions, courses about science communication, sustainability topics, courses in data science, entrepreneurship, presentation and application skills are offered. The study tracks have also been adapted and modernised in accordance with the new consortial composition.

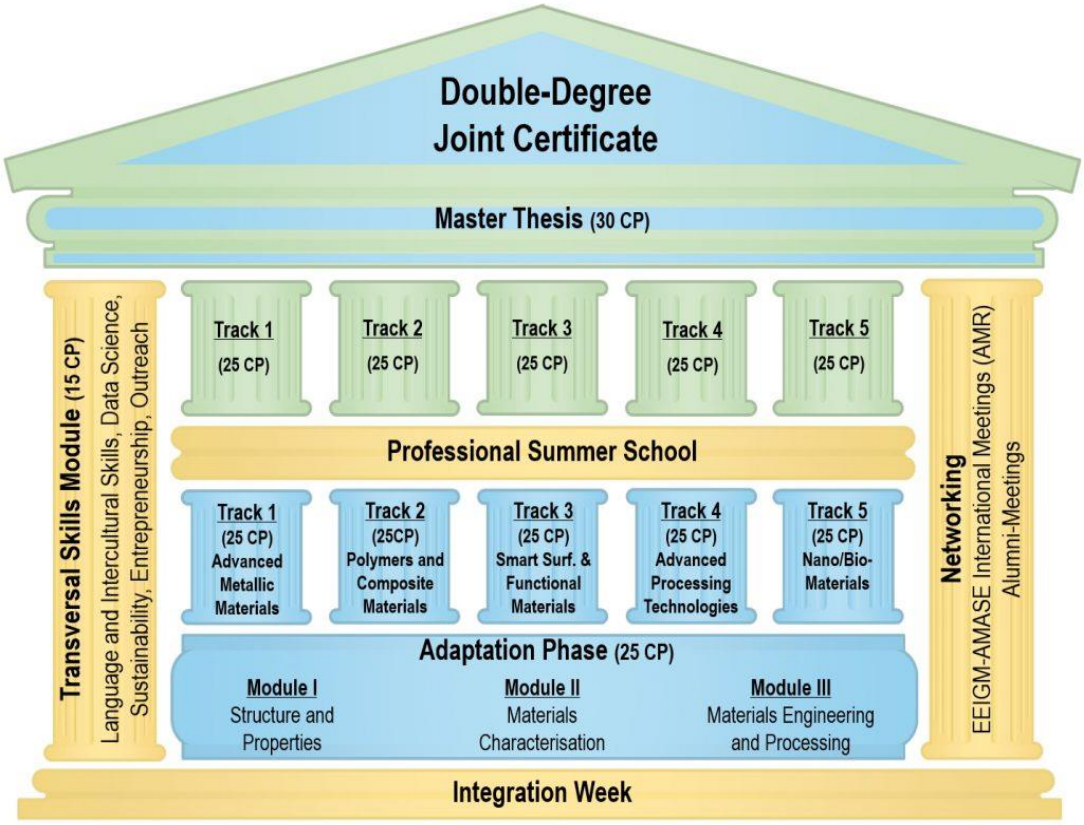

Fig. 6: Structure of the AMASE Master describing the amount of credit points in the different modules that leads to a Double Degree.

3.1.2. Transatlantic Double Bachelor in Materials Science and Mechanical Engineering (Atlantis)

www.atlantis-bachelor.net

The Transatlantic Double Bachelor in Materials Science and Mechanical Engineering was created in 2008 in cooperation with Saarland University, Oregon State University (USA) and Luleå University of Technology (Sweden). This four-year study course was supported by the European Commission after a successful application in 2007 for the EU-US Atlantis Programme – Transatlantic Degree Consortium Project. The materials science training in Germany and Sweden was followed by one year of mechanical engineering studies in the USA. The mobility included two semesters in Europe in the third year for the US students and two semesters in the USA in the fourth year for the European students. A short mobility between European countries (3 months) was also part of the programme. In September 2012, the financial support from the European Commission in the EU-US Atlantis programme, as well as the US Department of Education, expired as scheduled. Since that year, ATLANTIS continues as a cooperation between OSU and Saarland University without funding. Amongst all programmes funded under the EU-US Atlantis Programme, the ATLANTIS Bachelor is the only programme which is still successfully active. An agreement signed by both universities in October 2010 and renewed 2017 regulates the students exchange and ensures fee-waivers for UdS students at OSU.

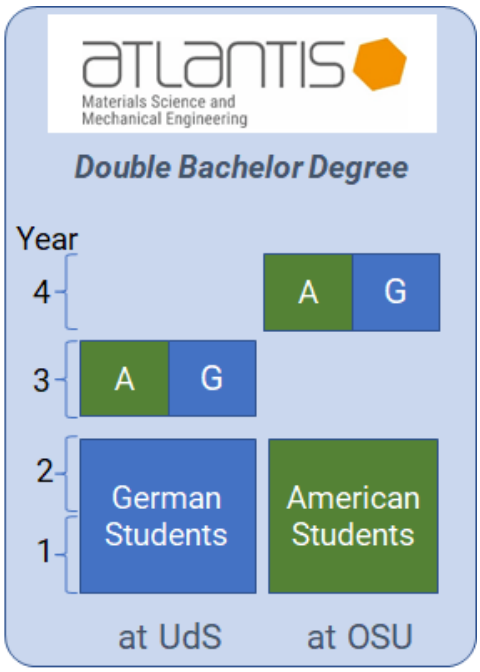

Fig. 7: Mobility scheme of the students of the American university (A) and the German university (G).

In 2018, an Integration Week was created for the new ATLANTIS and I.DEAR students. Students get to know each other and the EUSMAT team before beginning their studies. They are offered orientation workshops, intercultural trainings and laboratory visits as well as an excursion.

Since September 2009, 54 American and 29 German students have participated in the programme.

3.1.3. Joint European Doctoral Programme in Materials Science and Engineering (DocMASE)

www.docmase.net

A major goal of EUSMAT is to expand international training opportunities up to the doctoral level. Consequently, doctoral students are already able to gain international experience during their doctoral phase and may take advantage of the complementary expertise and research facilities of the participant groups.

In April 2010, EUSMAT was successful in its application for a new international doctoral programme within the framework of Erasmus Mundus. The DocMASE programme was designed together with five partner universities:

- Saarland University, Saarbrücken (Germany).
- Université de Lorraine, Nancy (France)
- Universitat Politècnica de Catalunya, Barcelona (Spain)
- Luleå Tekniska Universitet, Luleå (Sweden)
- Linköping Universitet, Linköping (Sweden)

As per the conditions of Erasmus Mundus, doctoral students have to complete their research project and courses at at least two universities of the consortium. A double or joint degree is obtained in the process. The financial support with Erasmus Mundus scholarships expired in 2019. Total funding amounted to 4,87 Mio €. This programme provided full funding for the research activities of 38 doctorates (33 of which finished their PhD) and helped create a durable structure for the international education of doctoral candidates. This structure includes regular summer schools and partnerships among different universities and associated partners. To date, 20 renowned partners cooperate within DocMASE (e.g. Sandvik Coromant in Sweden, Dillinger Hütte in Germany).

Next to the Erasmus Mundus funding, other scholarships were also provided for students participating in the DocMASE programme:

- DAAD scholarships within the Graduate School Scholarship Programme (GSSP). These scholarships are intended for students starting doctoral thesis work at Saarland University in Germany.
- PhD-Track of the Franco-German University provides complementary funding. In connection with DocMASE and the PhD-Track, full funding was obtained from the French Ministry of Education for doctorates between the University of Lorraine and the Saarland University.
- Interreg-Project PULSATEC provided full funding for additional doctoral candidates in the Greater Region.
- Different funding provided by different chairs at Saarland University through public projects or private companies enabled the participation of further candidates in the programme.

Since 2011, 54 doctoral candidates started their PhD in the consortium, 38 of them with Saarland University as hosting institution. Up to now, 36 candidates have finished their doctorate. Until December 2019, 206 peer-review publications were published by the different doctoral candidates.

3.1.4. I.DEAR Materials

http://www.eusmat.net/international-studies/master/i-dear/

I.DEAR Materials is an exchange programme between Germany and Argentina created in 2013 and coordinated by EUSMAT. This cooperation between the Universidad Nacional de Mar del Plata in Argentina, the Friedrich-Alexander-Universität Nürnberg-Erlangen (FAU) and the Universität des Saarlandes is supported by I.DEAR (Ingenieure Deutschland-Argentinien), a bilateral programme for the promotion of exchange projects between Germany and Argentina for engineering study courses. I.DEAR Materials enables master students of materials science and engineering of the German universities to spend one year in Argentina and students of the 4th and 5th year of the engineering programme of Argentina to spend one year in Germany. During the period abroad, the students have to spend one semester at the corresponding partner university and about 4 months doing an internship at a company. During the mobility, the students have to attend classes in the foreign language, German and Spanish respectively.

The year abroad is funded by the German-Argentinean University Center (CUAA-DAHZ) with a full scholarship, which includes travel costs, health insurance and language courses. Since October 2018, EUSMAT also organises an Integration Week for the I.DEAR students coming to Germany, which students of the Atlantis programme also attend.

Since 2015, 29 students have participated in the programme, 17 of them at Saarland University (2 outgoings and 15 incomings).

3.2. Supporting projects

3.2.1. Lifelong-Learning-Concept and Transversal skills

EUSMAT wants to develop the students' personalities and potential in order to facilitate their adaptation to new challenges and new cultural environments and make them exceptional candidates for leadership positions. Therefore, EUSMAT created a lifelong-learning-concept which starts at the beginning of a study programme, accompanies students through their studies and keeps in touch with them after their graduation.

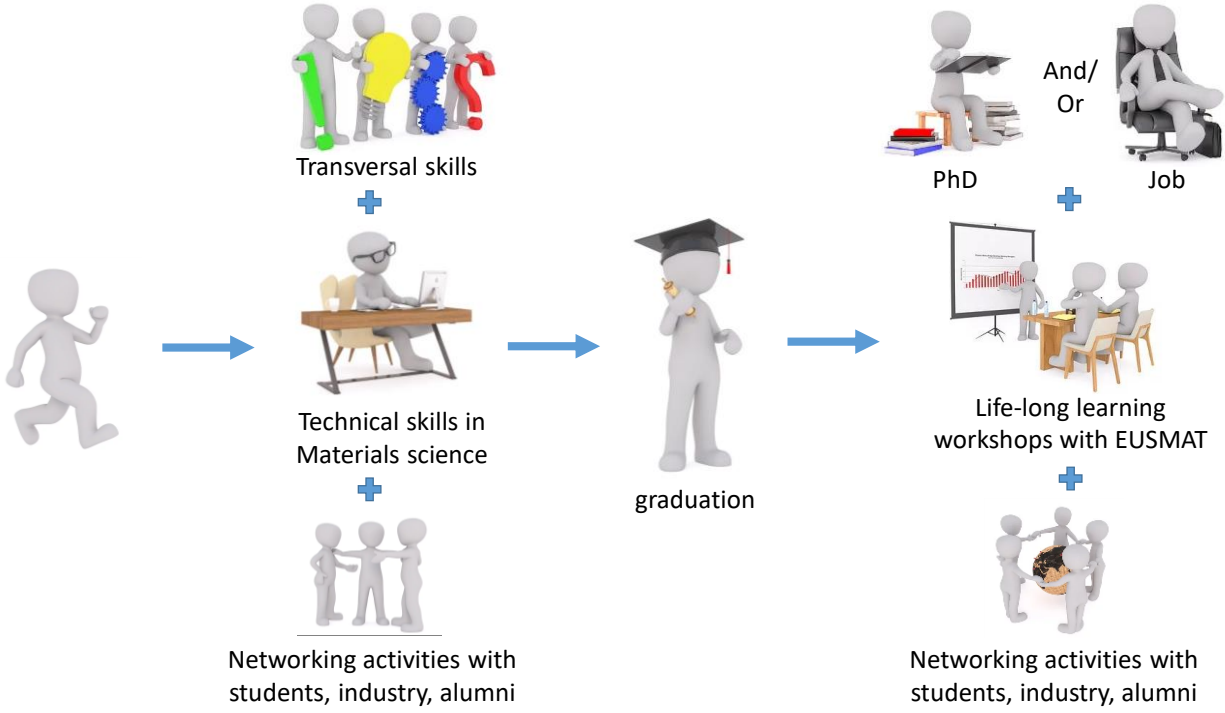

Fig. 8: Lifelong-learning-concept and transversal skills.

To prepare students for their future careers in the best possible way, they do not only receive an education in materials science and engineering. Transversal skills, such as very good language knowledge, intercultural competence, diversity awareness, adaptability to new technologies and working environments as well as science communication, are fundamentally necessary abilities needed to be successful in working life. EUSMAT integrates workshops on transversal skills in its different study programmes. Furthermore, students studying with EUSMAT benefit from its multilingual policy, meaning that students do not only study in English but also learn the local languages. This increases their job prospects by a large margin if they want to stay in Europe.

EUSMAT emphasises towards its students and guest professors the importance of being part of a well-established network. Therefore, students get in touch with EUSMAT alumni during their studies, e.g. at different events such as the Professional Summer School or the alumni meetings. Thanks to the lifelong-learning-concept students are aware of the benefits of networking. On the one hand, guest professors are integrated into the local scientific teams as well as into the study programme by giving lectures and participating in research activities. On the other hand, EUSMAT alumni are important multiplicators. They disseminate the possibilities offered by EUSMAT programmes in their home countries and represent an

important link to the industry. Depending on the career development of each person, we expect our alumni to be able to establish new cooperation links in the future. By keeping contact to its alumni, EUSMAT has considerably increased networking with industrial partners which offers students the chance to get in touch with future employers before their graduation.

3.2.2. AMASE Integration Week and Professional Summer School

Since 2013, EUSMAT organizes the annual Integration Week (IW) in order to support AMASE students further in their study programme and to enhance their coping capability with upcoming challenges. This week takes place at Saarland University at the end of August. All AMASE first-year students, i.e. not only those who will be studying in Germany, meet in Saarbrücken and attend various courses in order to be well prepared for their studies. The activities include a two-day intercultural training, a team-building workshop, a lecture on presentation techniques, laboratory tours, information about the university system and the study programme, and an excursion to the European Parliament in Strasbourg. In addition, networking activities, such as a barbecue evening and an excursion within the Greater Region, are carried out together with students from higher semesters as well as with alumni.

Based on the experience gathered from these events, similar events are offered to students of other programmes, such as the Atlantis and I.DEAR-Materials programmes. In this case in a reduced capacity and adapted to the specific necessities of these programmes.

The most important contents of the Integration Week workshops are described in the following points.

The Intercultural Training

This training was developed in cooperation with Prof. H.-J. Lüsebrink and Prof. C. Vatter (former Chair of Romance Cultural Studies and Intercultural Communication).

During the intercultural trainings of the Integration Week, students are prepared for their studies abroad. The workshop includes modules about the impact of the students' culture on their way of perceiving the world and on their action, culture shock, critical incidents analysis, current theoretical communication basics, cultural standards and a unit on stereotypes/clichés /prejudices. All units consist of a theoretical introduction to the topic, a group activity, simulations and discussions in plenary or small groups, which emphasise the exchange between students from different cultural areas.

Fig. 9: Intercultural Communication Training during Integration Week 2018

Workshop on presentation techniques

Being able to present one's results convincingly is an important skill that engineers need for their careers. Unfortunately, little attention is paid to this topic in undergraduate studies and, correspondingly, this skill is poorly developed among many international students. In this workshop, students learn how to prepare presentations, present them in an appealing way and present them convincingly.

Teambuilding (AstWerk, trainers specialised in experiential education)

During the teambuilding event, trust is built in a culturally and linguistically diverse group of students so that they can build a supportive network to use during the master's programme and in their future careers. In doing so, AstWerk trainers draw on experiential education that leads to a sense of community beyond cultural or linguistic differences.

Fig. 10: Teambuilding during Integration Week 2019

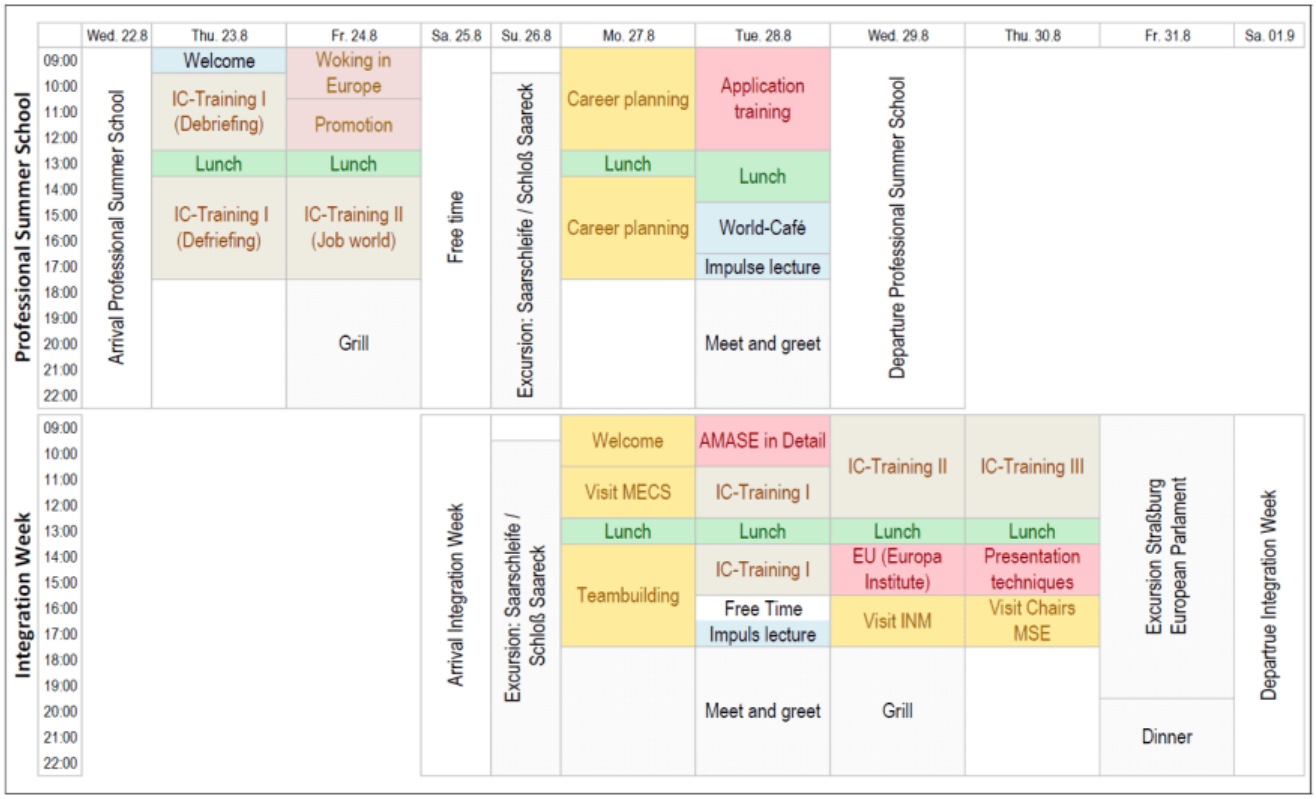

Fig. 11: Timetable of Integration Week and Professional Summer School

In 2018, a second format was introduced to further support AMASE students during their studies: the Professional Summer School (PSS) takes place at Saarland University and is addressed to second year students. It focuses on job application, career planning and networking with the industry.

Some examples of workshops and events during the Professional Summer School are:

Intercultural Communication in Business Life

During the first part of this workshop, the focus lies on sharing participants' experiences in the European university system as well as everyday life in Europe. A structured and reflected debriefing of the partially completed stay abroad takes place, which makes the students aware of the competencies they have already acquired. This creates a positive awareness of the stay abroad and one's own personal development.

The second part consists of concrete preparation for the European job market from an intercultural point of view. Here, first of all, the culture-specific peculiarities of the German and European working world (hierarchical levels, communication between boss and employee, communication with colleagues and customers, etc.) are brought into focus. Case studies are used to reflect on strategies for dealing with difficult situations and to develop solutions. The participants are prepared for their international career in the areas of working in a multicultural team as well as intercultural conflict management through cultural theoretical concepts and models. The preparations are supported through interactive exercises.

Working in Europe (European employment services EURES)

Many foreign students wish to gain their first work experience in Europe or even wish to work permanently in Europe after graduation. However, this plan often fails due to practical aspects such as a lack of knowledge about applicable labour and residence laws, non-recognition of educational qualifications, or too much uncertainty regarding tax aspects or later pension payments. In this module, advisors from EURES provide concrete answers to the most frequently asked questions about the mobility of international workers in the German labour market, and also focus specifically on mobility in the Greater Region.

Doing a PhD? (conducted by the graduate programme GradUs of the UdS and EUSMAT)

Some students already know towards the end of their studies that they want to pursue a doctorate, while others are still uncertain. Although study programmes specifically prepare students for possible PhD studies, additional questions arise concerning financing (PhD positions and scholarships), application modalities, career prospects after the doctorate and the search for supervisors. An important focus is the comparison of career prospects of students who enter into an industry position after their master, of those who perform a doctorate in the industry and those doing a traditional doctorate in the academic world. This way, the seminar provides orientation and decision-making aids.

Application training (external trainer)

In order a successful entry into the job market, it is particularly important for international applicants to know that there are different formal criteria and customs for written applications and personal interviews in the different countries. Even though the workshop focuses on European customs, the learnings from this workshop can be applied anywhere. The aim of this module is to introduce the students to the different written application documents (CV, letter of motivation, etc.) and to focus in particular on the specific vocabulary. The use of application photos and the topic of salary negotiations are also discussed. In addition to this theoretical information, students are also prepared for the application process via simulated digital and in person job interviews.

Career planning (external coach)

Towards the end of their studies, comprehensive career planning also plays a major role for students. In this module, students are given the opportunity, under the guidance of a coach, to work out for themselves individually what is important to them for their further life and career, what options they see professionally, what goals they have and how they can achieve them through their own efforts.

Speed dating with representatives from industry and business

STEM students repeatedly state in evaluations that they would like to have more contact with industry and business during their studies. This wish is to be fulfilled in the present module in the form of speed dating with representatives from the relevant areas.

Representatives from industry and business, including in particular former international students from the participating degree programmes, will be available to individual groups of students for 15 minutes each. The students can decide for themselves which aspects they want to address in the discussion. After the time has expired, the group moves to the next table and can have another conversation with the next representative. In this way, contacts can develop quickly, which can then be deepened in an informal setting at a subsequent dinner.

Fig. 12: Participants of Integration Week and Professional Summer School 2019 at Saarland University.

Both events, the Integration Week and the Professional Summer School, overlap so that first year students can meet the students who are starting their second year. This gives them the possibility to exchange experiences and to get to know each other. The German Rectors' Conference HRK wrote a dedicated article on the Professional Summer School as a best practice example in their HRK-EXPERTISE manual about career services for international students in 2021.

In 2020, the Integration Week was held digitally due to the Covid-19-pandemic. Both students and workshop leaders highly praised this implementation. The networking aspect among students seems to be even greater this year than in previous years due to the pandemic, and was not hindered by the virtual learning space (MS Teams/Zoom). This marked an extraordinary pedagogical team effort despite the adversities of the Covid crisis.

Evaluation of the Integration Week and Professional Summer School

In 2018, EUSMAT decided to evaluate the effectiveness of the Integration Week and Professional Summer School. The evaluation focused on the fulfilment of students' expectations towards these instruments and on students' competence development as a consequence of these two events. Furthermore, the evaluation delivered insights on how IW and PSS has contributed and still contributes to students' performance in the AMASE programme, and how second year students assess their experience in the AMASE programme so far. The evaluation was designed by the Center for Evaluation CEval GmbH in

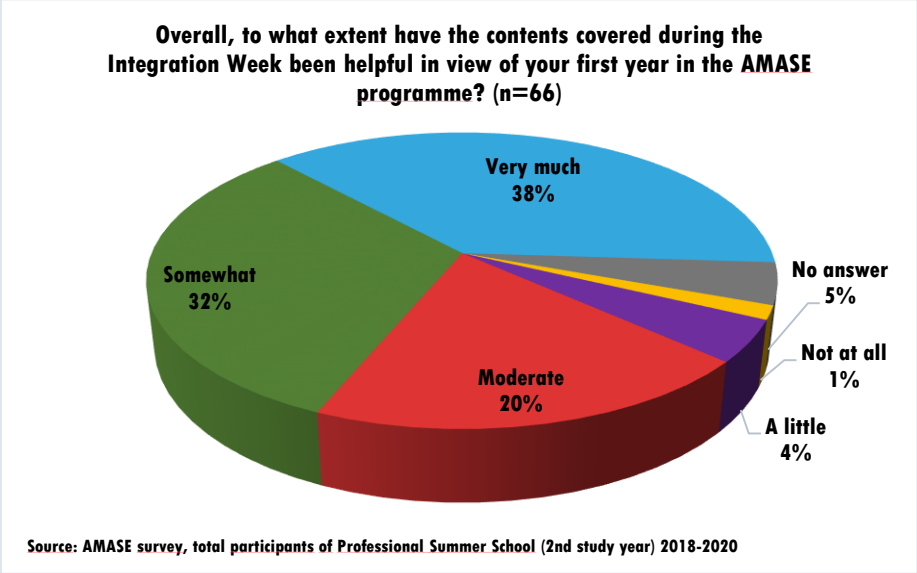

Fig. 13: Helpfulness of contents during Integration Week for first year in AMASE

cooperation with EUSMAT. A report was published in 2018. It shows that the Integration Week is well adapted to the needs of the students. The students felt that the event prepared them very well for their stay abroad and for their studies at Saarland University and the partner universities. The multi-day intercultural training programme was especially emphasized by the interviewees as an important factor of the Integration Week. They stated that the training had proven to be extremely helpful for the success of their studies, the understanding of the respective foreign culture and the dynamics of the student group.

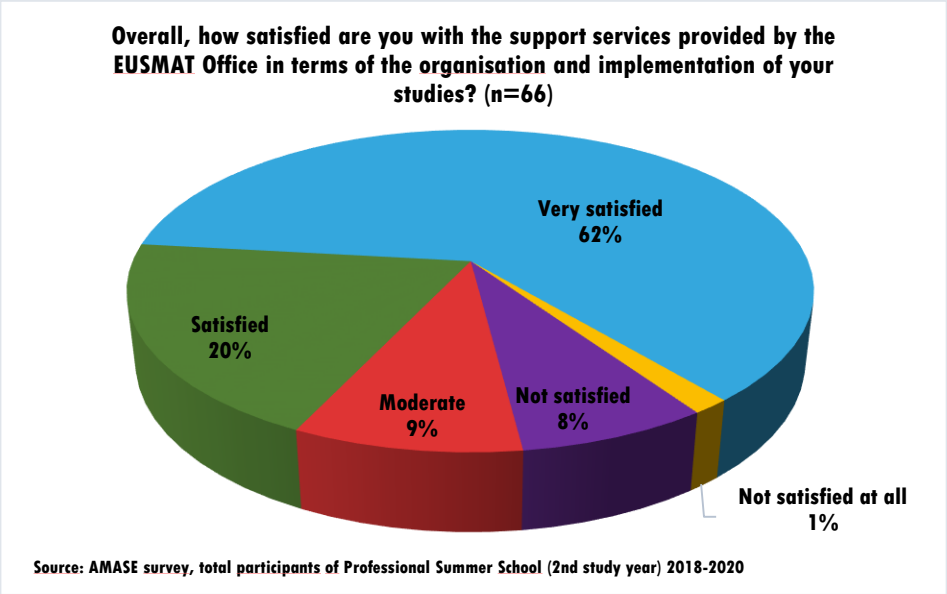

Fig. 14: Satisfaction with support services by the EUSMAT team

For many of the students the study programme is their first longer stay in a foreign country.

Due to the valuable insights gained, EUSMAT decided to carry on these evaluations for all subsequent cohorts.

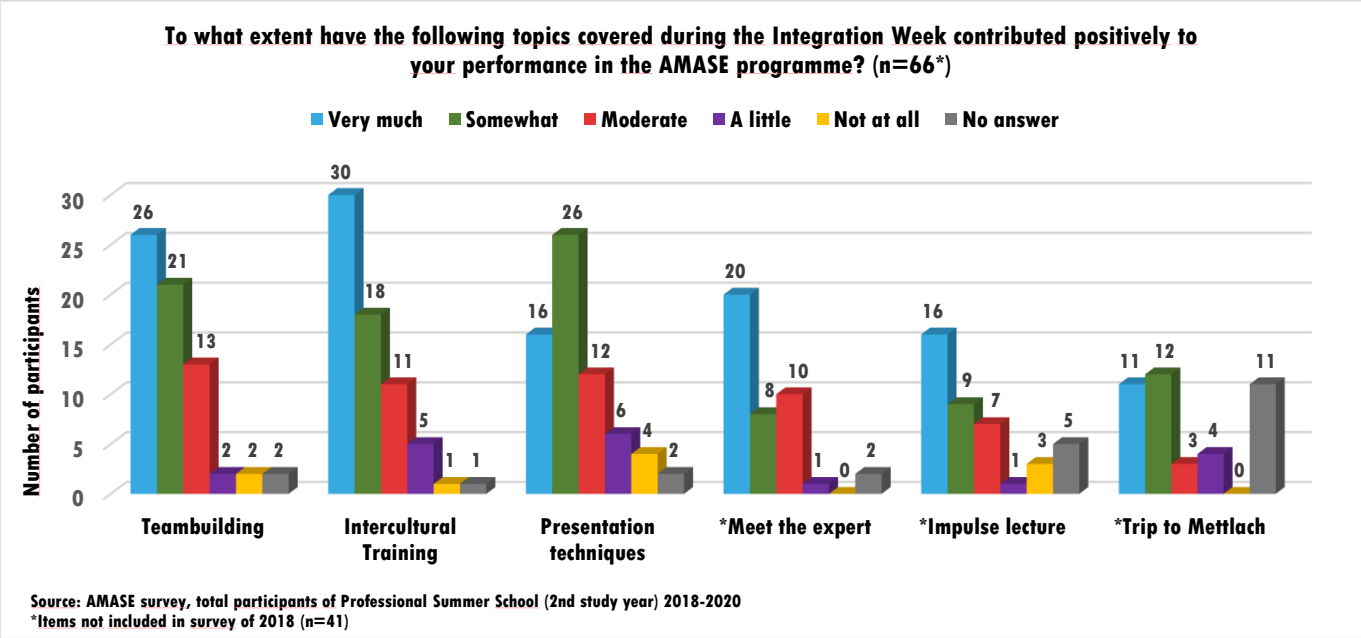

Fig. 15: Positive contribution of Integration Week's topics to performance during AMASE

3.2.3. Alumni meetings

The overall goal of the alumni meetings is establishing tong-term communication between graduates and EUSMAT as well integrating the alumni into an ever-growing network of academic contacts. The alumni meeting is an important component of EUSMAT's lifelong learning concept and networking, and contributes to the ongoing dialogue with former students and researchers. The meeting is addressed to all former students and researchers as well as of the international study programmes of EUSMAT. It takes place every two years in Saarbrücken and includes the following elements:

Alumni meeting

Each participant introduces him/herself with a short presentation. The participants should report about their studies in Saarbrücken, their career and their current activities.

Professional training

This workshop is dedicated to a current topic of Materials Science and Engineering, such as "Modern Methods of Microstructure Analysis" (2017 and 2019) or "Digital Transformation in Materials Science and Engineering" (to be held in 2022). External and local experts in the field are invited to Saarbrücken to give presentations and discuss the topics with the participants.

Fig. 16: Alumni Meeting 2017 with Dr. Mathias Maurer, former student in Materials Science at Saarland University and ESA astronaut.

Transversal skills training

In this part of the alumni meeting, participants are further qualified in different transversal skills. Aspects such as innovation, business start-up, project application, project management, science communication etc. are covered by internal and external experts.

3.2.4. Evaluation of international mobility of STEM students at Saarland University

In the STEM subjects at Saarland University, the number of German students participating in any of the numerous international mobility programmes is very low. Among other things, this is reflected in low ERASMUS outgoing figures and contrasts with the stated goal of Saarland University's internationalisation strategy, according to which: one third of graduates should have spent at least three months abroad. For this reason, in 2020, EUSMAT commissioned CEval GmbH to conduct a study with the aim to review the international mobility of students in four disciplines of the faculty:

- Materials Science and Engineering
- Systems Engineering
- Physics
- Chemistry

The aim of the study was to analyse possible reasons for the low number of stays abroad in order to develop measures to increase mobility. Amongst others, students stated that the main obstacles are a lack of financial support and a lack of information combined with confusion about the appropriate person that could advise them concerning a stay abroad in their faculty. Additionally, representatives from some disciplines were not sure themselves whose task it was to advise the students, which explains the aforementioned confusion. Some representatives had even been sceptical about a stay abroad themselves, which makes it even harder for a student to imagine that accommodating a stay abroad in his/her studies might be a good idea. The Materials Science and Engineering department is an exception to this. Due to the various activities of EUSMAT, only 5,3 % of the Materials Science students state that they have never been informed about the possibilities of stays abroad (in contrast to 37,7 % in Systems Engineering, 31,3 % in Physics and 35,6 % in Chemistry). Furthermore, 15,6 % of the Materials Science and Engineering students plan to do a stay abroad, which is far more than in the compared disciplines, and 37 % state to be interested in studying abroad without having made a decision yet.

The results of the study were presented to and discussed with the representatives of the different disciplines as well as with the International Office. Individual approaches for increasing mobility were jointly developed during these meetings. The results were also presented and discussed in the Internationalization Committee of Saarland University who supported the study with 20.000 €.

3.3. Research projects

EUSMAT supports the research groups of the department of Materials Science and Engineering in the design, execution and management of international research projects. In the past, EUSMAT managed three projects for the exchange of researchers funded by the European Commission (NanoCom, SUMA2-Network and CREATe-Network) and one by the DAAD (thermomechanical processes of emerging metallic materials under the PPP-Brazil scheme). Currently, there is an ongoing exchange project funded by the DAAD in cooperation with the Cornegie Melon University in USA and two projects within the Greater Region funded under the Interreg Scheme of the European Commission.

3.3.1. FAFil - Additive manufacturing through wire deposition

The goal of the FAFil project is the development of a new additive laser manufacturing process, including the entire value chain from the materials microstructure design up to the production of an industrial prototype. The solutions developed over the course of the project should be validated through the production of a demonstration object and will be integrated into the

existing additive manufacturing platform of the Institut de Soudure (Yutz, France) to establish an international reference. The platform should support the integration of this technology among small and medium enterprises in the Greater Region. For this purpose, the project bundles the key resources and competences available in the Greater Region in the fields of welding, metallurgy, robotics, topological optimisation, digital simulation and finishing. Beyond the solutions developed, this project will promote cooperation in the cross-border region in the field of additive manufacturing by creating a sustainable network of excellence. The project is coordinated by the Institut de Soudure, of which the chair of Functional Materials at Saarland University is a partner, assisted by EUSMAT. The project runs from 15.01.2018 to 14.01.2022 and is funded by the European Commission under the programme Interreg V-A FR-B-DE-LU (Großregion) with a total amount of 1.754.409,34 €. EUSMAT receives a funding of 207.630 € from the EU, wherein a small part from the federal state of the Saarland is included. The participating institutions are:

- Institut de Soudure Association (France) - Coordinator
- Saarland University (Germany)
- Université du Luxembourg (Luxembourg)
- CRITT Techniques Jet Fluide et Usinage (France)
- Université de Liège (Belgium)
- Pôle de Compétitivité MATERALIA (France)
- Centre de Recherche Métallurgique - CRM (Belgium)
- CENAERO (Belgium)

Fig. 17: Posters of the Interreg projects FAFil and PULSATEC

3.3.2. PULSATEC - Application of surface treatment technologies by pulsed plasma on complex 3D surfaces and shapes

PULSATEC aims to strengthen the competitiveness and attractiveness of the Greater Region by reinforcing cross-border cooperation in research and development in the field of materials surface treatments with pulsed plasma deposition technologies. The chair for Functional Materials and EUSMAT are part of this cooperation platform, which brings together research centres and industries as well as clusters that ensure economic transfer in the Greater Region.

Five international doctorates in co-tutelle between the universities of the Greater Region are working on the fundamentals of the production of 3D surfaces, the growth mechanisms of the coatings by pulsed plasmas, the real-time and in-situ control of the plasma processes and the characterization of surface properties. Three of these doctoral candidates will conduct research at the chair for Functional Materials of Saarland University. Additionally, the project also aims to address concrete problems of industrial partners. The existing plasma surface treatments should be able to modify complex geometric objects and thus open up new opportunities in competitive markets.

The project is coordinated by the University of Lorraine and runs from 01.10.2018 to 30.03.2022. It is funded by the European Commission under the programme Interreg V-A FR-B-DE-LU (Großregion) with a total amount of 1.115.586 €. EUSMAT receives a funding of 278.983 € from the EU, wherein a small part comes from the federal state of the Saarland. The participating institutions are:

- Université de Lorraine (France), coordinator
- Saarland University (Germany)
- Luxembourg Institute of Science and Technology (Luxembourg)
- Centre de Recherche Métallurgique - CRM (Belgium)
- Universite de Liege (Belgium)

3.3.3. DAAD-PPP-USA - Deep Materials Microstructure Characterization

This project funded under the Programme for Project-Related Personal Exchange (PPP) with the USA runs in 2021 and 2022 and focuses on the use of data science and machine learning techniques in Materials Science and Engineering, especially in microstructure analysis applications. It will allow the exchange of Master and Doctoral students and researchers between the two participating institutions.

The collaboration partners are the Carnegie Mellon University, Prof. Elizabeth Holm (USA), and the Chair of Functional Materials, Prof. Frank Mücklich (Germany).

Nowadays, great challenges exist for contrasting, segmentation, classification, and quantification of the microstructural features of advanced steels since their microstructures are becoming more and more complex. At the same time, enormous progress has been made in recent years in computer science related to image and data processing, as well as Machine Learning (ML), especially Deep Learning (DL). These advances open a wide range of possibilities for new materials characterization and development tools.

These include data-driven approaches for correlating the processing, microstructure, and properties of a material. Moreover, newer and more efficient image processing techniques like segmentation and extraction of microstructural features, or different classification techniques, can be implemented. However, it is important to not just jump on this bandwagon to use ML or DL as a panacea, without precisely grasping the complex material-specific questions, but to consider a holistic approach of using ML.

This means not only focusing on micrographs and extracted data but also selecting suitable samples and establishing reproducible sample contrasting and finding the optimum imaging technique.

The main scientific goals are the building of an infrastructure for present and future exchange, the advancement of feature extraction and classification techniques, developing the segmentation of complex-phase-steel microstructures by deep learning and the classification of fracture surfaces, and the development of workflows for unsupervised machine learning.

3.4. Events

The successful development of the different study and research projects requires the organization and implementation of different events. This not only provides a very valuable contribution for further qualification of the students, researchers and alumni of the department, but also presents networking opportunities which are very important for the further career development of the participants. These kinds of events are summer schools for doctorates, the integration weeks for the international study programmes, and workshops related to research projects and activities for visiting students. The main events organized by EUSMAT (sometimes in cooperation with partner universities) are summarized in the following table:

Table 3: Main events organised by EUSMAT

Date and Place (*1)	Name of the Event	N° of Part.	Local and external experts
21.09 – 25.09.2015, Saarland University, University of Lorraine	Study trip of students from Instituto Politécnico Nacional (Mexico) in Germany, DAAD	15	- F. Mücklich, F. Soldera, EUSMAT - W. Possart, R. Classen, D. Bähre, U. Rabe, Saarland University
27.08 – 01.09.2012	AMASE Integration Week (together with DocMASE 1st Summer School)	20	- V. Reck, J. Kretschmer, EUSMAT
27.08 – 01.09.2012	DocMASE 1st Summer School - 3D Characterization of Materials - From micro to atomic scale	15	- N. De Jonge, Leibnitz Institute of New Materials, Germany - M. Maisl, Fraunhofer Institute of Non-Destructive Testing, Germany - A. Rack, European Synchrotron Radiation Facility, France - R. de Kloe, EDAX BV Ametek, The Netherlands - K. Schladitz, Fraunhofer Institute for Industrial Mathematics, Germany
25.08 – 30.08.2013	AMASE Integration Week	22	- V. Reck, F. Diekamp, EUSMAT - M. Hans, Saarland University
26.08 – 30.08.2013, Linköpings University, Sweden	DocMASE 2nd Summer School - Multiscale Modelling in Materials Science and Engineering	18	- Malin Selleby, KTH Royal Institut of Technology, Sweden - I. A. Abrikosov, S. Simak, F. Tasnádi, B. Alling, P. Steneteg, K. Grönhagen, IFM, Linköping University, Sweden
24.08 – 31.08.2014	AMASE Integration Week	23	- C. Heß, F. Diekamp, K. Krüger, E.Filleböck, EUSMAT - L. Reinert, Saarland University
25.08 – 29.08.2014, University of Lorraine, France	DocMASE 3rd Summer School - Thin Films Science and Surface Engineering	23	- J. Greene, University of Illinois, USA -F. Reniers, Université Libre de Bruxelles, Belgium - M. Hans, Saarland University - D. Horwat, J.-F. Pierson, T. Czerwiec, G. Marcos, University of Lorraine, France
04.12 – 05.12.2014, Universidad Nacional de Mar del Plata, Argentina	Workshop I.DEAR – Exchange possibilities in Germany	33	- F. Soldera, EUSMAT - M. Alonso Frank, Friedrich-Alexander-University Erlangen-Nuremberg - S. Simison, O. Lachner, Universidad Nacional de Mar del Plata, Argentina - K. Megerle, German Embassy in Argentina - U. Urban, DAAD-Buenos Aires, Argentina - A. Cabo, Ionar S. A., Argentina

23.08 – 29.08.2015	AMASE and I.DEAR Integration Week	26	- K. Lauer, AST-Werk - C. Heß, N. Kreutz, M. König, B. Schneider, EUSMAT - L. Reinert, Saarland University
07.09 – 11.09.2015, Politechnical University of Catalonia, Spain	DocMASE 4th Summer School - Mechanical Properties of Advanced Engineering Materials	21	- J. Kruzic, Oregon State University, USA - E. Sáiz, Imperial College, UK - R. Danzer, University of Leoben, Austria - J. L. García, AB Sandvik Coromant R&D, Sweden - C. Motz, Saarland University - M. Anglada, Politechnical University of Catalonia, Spain
28.02 – 02.03.2016, Universidad Católica del Uruguay, Uruguay	Workshop on processing and characterization of advanced steels and alloys – CREATe-Network and SUMA2-Network	22	- M. Duarte, Universidad Católica de Uruguay - S. Brühl, E. Brandaleze, E. Benavidez, Universidad Tecnológica Nacional, Argentina - S. Simison, Universidad Nacional de Mar del Plata, Argentina - G. Gomez, Tenaris S. A., Argentina - E. Ramos, A. Rosenkranz, Pontificia Universidad Católica de Chile - D. Britz, MECS, Germany - S. Suarez, F. Soldera, Saarland University - H. Cavalcanti Pinto, Universidade de Sao Paulo, Brazil
30.05 – 03.06 2016, Luleå University of Technology, Sweden	DocMASE 5th Summer School - Composite Materials	24	- R. Joffe; J. Varna, K. Oksman, A. Larsson, A. Soldatov, A. Volmiero, J. Xu - Luleå University of Technology, Sweden - M. Loukil, A. Pupurs – SICOMP, Sweden - Leif Asp - Chalmers University, Sweden - Ramesh Talreja - Texas A&M, USA
21.08 – 27.08.2016	AMASE and I.DEAR Integration Week	28	- K. Lauer, AST-Werk - C. Heß, N. Kreutz, M. König, B.Schneider, EUSMAT - L. Reinert, Saarland University
30.03 – 07.04.2017	1st International Network Meeting of EUSMAT, including a DAAD-Alumni Meeting and the 9th EEIGM/AMASE International Conference on Advanced Materials Research	121	- F. Mücklich, EUSMAT - C. Motz, Saarland University - M. Maurer, European Space Agency, Germany - C. Daniel, Oak Ridge National Lab, USA - A. Lasagni, TU Dresden, Germany - S. Zabler, Fraunhofer IIS, Germany - G. Requena, DLR, Germany - L. Germain, University of Lorraine, France - T. Dahmen, DFKI, Germany - P. Felfer, Friedrich-Alexander-University Erlangen-Nurenmberg - S. Zäfferer, MPI Eisenforschung, Germany - T. Burnett, University of Manchester, UK - P. Choquet, LIST, Luxembourg
10.09 – 15.09.2017, Saarland University and University of Lorraine, France (*2)	DocMASE 7th Summer School - Modern methods for materials characterization and 3D microstructure analysis	17	- P. Philipp, Luxembourg Institute of Science and Technology, Luxembourg - M. Maisl, Fraunhofer Institute of Non Destructive Testing, Germany - H. Cavalcanti Pinto, University of Sao Paulo, Brazil
20.08 – 25.08.2017	AMASE and I.DEAR Integration Week	38	- K. Lauer, AST-Werk - C. Heß, N.Kreutz, C. Danzer, EUSMAT - L. Reinert, Saarland University
23.08 – 28.08.2018	AMASE Professional Summer School	32	- F. Soldera, C. Heß, N. Kreutz, C. Danzer, EUSMAT - T. Jäger, B. Jochum, V. Reck, N. Wajba, Saarland University - A. Dürschmid, EURES - Bundesagentur - C. Hooper, Freelancer - S. Tenschert, Robert Bosch Gmbh, Germany - M. Taher, Graphmatech, Sweden

			- S. Hartman, Eberspecher, Germany - R. Frauendorfer, ZF Friedrichshafen, Germany - D. Schnubel, Nemak Dillinger - D. Katrakova-Krüger, Hochschule Köln, Germany
26.08 – 21.08.2018	AMASE Integration Week	29	- K. Lauer, AST-Werk - C. Heß, N.Kreutz, C. Danzer, EUSMAT - P. Grützmacher, M. Fröhlich , Saarland University
16.09 – 28.09.2018, Saarland University, TU Dresden, F.A. University Erlangen-Nurembert, TU Darmstadt	Study trip of student group from Argentina in Germany, DAAD	15	- F. Soldera, EUSMAT - A. Lasagni, TU Dresden - A. R. Boccaccini, F.-A.-University Erlangen-Nuremberg - M. Acosta, TU Darmstadt
26.09 – 28.09.2018, TU Darmstadt, Germany	CREATe-Network Meeting and Symposium PO3 in the Materials Science and Engineering Conference	25	- F. Soldera, F. Mücklich, Saarland University - E. Jimenez Pique, Politechnical University of Catalonia, - J. L. García, Sandvik Coromant, Sweden - M. Duarte, Universidad Católica del Uruguay - C. Carrasco, Universidad de Concepción, Chile - S. Simison, D. Sosa, R. Boeri, INTEMA, Argentina - M. Mathe, CSIR, South Africa - H. Cavalcanti Pinto, Universidade de Sao Paulo, Brazil - I. Green, Georgia Tech, USA - S. Brühl, Universidad Tecnológica Nacional, Argentina - E. Ramos, D. Diaz, P. Universidad Católica de Chile
08.10 – 12.10.2018	I.DEAR and Atlantis Integration Week	11	- C. Heß, C. Danzer, EUSMAT - C. Hooper, Freelancer - T. Lindemann, Saarland University
22.08 – 27.08.2019	AMASE Professional Summer School	28	- F. Soldera, C. Heß, C. Danzer, EUSMAT - T. Jäger, B. Jochum, V. Reck, N. Wajba, Saarland University - A. Dürschmid, K. Krüger, EURES – Bundesagentur - C. Hooper, Freelancer - J. L. García, Sandvik Coromant, Sweden - M. Bick, Saarhartmetal, Germany - A. Schneider, Dillinger Hütte, Germany - J. Keller, Materialia, France - N. Portha, Viessmann, France - O. Berck, IHK-Saarland, Germany
25.08 – 30.08.2019	AMASE Integration Week	35	- K. Lauer, AST-Werk - C. Heß, N.Kreutz, C. Danzer, EUSMAT - S. Suarez, S. Zeitzmann, Saarland University
23.09 – 27.09.2019, (*2, *3)	DocMASE 8th Summer School - Surface engineering: surface structuring and functional coatings	17	- A. Lasagni, TU Dresden, Germany - S. Slawik, A. Ernst, T. Hall, T. Fox, Saarland University - D. Horwat, University of Lorraine, France - T. Minea, University of Paris South, France - M. Jilavi, P. Rogin, Leibnitz Institute for New Materials, Germany
07.10 – 11.10.2019	I.DEAR and Atlantis Integration Week	10	- C. Heß, C. Danzer, EUSMAT - C. Hooper, Freelancer - T. Lindemann, Saarland University
11.11 – 15.11.2019	1st International Network Meeting of EUSMAT (DAAD-Alumni Meeting)	48	- G. Requena, DLR, Germany - M. Marsh, Object Research Systems Inc., Canada - P. Slusallek, DFKI, Germany - C. Rendenbach, TU Keiserslautern, Germany - F. García-Moreno, Helmholzzentrum Berlin, Germany

			- E. Zschech, Fraunhofer-Instut für Keramische Technologien und Systeme, Germany - R. Geurts, Thermofischer, Netherlands - J. Haardt, Eurice GmbH, Germany - C. Busch, VDI Technologiezentrum GmbH, Germany - B. Van Aerssen, Verrochio Institute for Innovation and Competence GmbH, Germany
20.08 – 28.08.2020 - Virtual	AMASE Professional Summer School	32	- F. Soldera, C. Heß, C. Danzer, EUSMAT - T. Jäger, B. Jochum, V. Reck, N. Wajba, Saarland University - A. Dürschmid, K. Krüger, EURES - Bundesagentur - C. Hooper, Freelancer -
20.08 – 28.08.2020 - Virtual	AMASE Integration Week	15	- K. Lauer, AST-Werk - C. Heß, N.Kreutz, C. Danzer, EUSMAT - S. Suarez, S. Zeitzmann, Saarland University

(*1) If not otherwise indicated, the event took place at Saarland University.

(*2) The DocMASE summer schools in 2017 and 2019 were co-funded by the Franco-German University.

(*3) The DocMASE summer school in 2019 was also organized in the frame of the PULSATEC project.

3.5. PR and Marketing

PR and Marketing activities have two goals. On the one hand, to attract students for the different international programmes, using different marketing tools depending on the target groups. On the other hand, it is important to enhance the reputation of EUSMAT by disseminating information about its activities and achievements. In doing this, we pay special attention to promote diversity in both gender and ethnic groups.

We implement different marketing strategies in order to 1) attract both European and non-European students, 2) to increase the visibility of our study programmes, and 3) to create a long-term “client-based-relationship” with our students. In 2017, Jana Leinenbach, a student of the master’s programme Business Administration wrote her master’s thesis about EUSMAT. She explored the image of EUSMAT, comparing the self-perception and outside reception of the institution and made recommendations. She also analysed the information and decision process of international and national students. As the website plays a significant role in the decision-making process of whether a student chooses to study at EUSMAT, it was recommended to improve its structure and information. Another result of the thesis was that job and career chances after graduation should be more on display, such as success stories of former students and networking possibilities with the industry. On top of that, it was suggested to strengthen the relationship between EUSMAT alumni and current students.

3.5.1. EUSMAT Corporate design

As a reaction to the above study, EUSMAT decided to create a new corporate design and homepage. In 2018, the marketing and digital business company FBO GmbH was selected to develop a style guide with new logos, fonts for print and web use, business cards and letterhead. Also included in the design manual are the new logos for the study programmes AMASE, Atlantis and I.DEAR-Materials. An additional promotional strategy is to provide different gadgets to our students and partners to deepen the relationship, stay in mind, increase the recognition and visibility of the brand. That’s why EUSMAT regularly buys gadgets, such as t-shirts, backpacks, pencils, luggage tags, writing pads, etc. for events such as the Integration Week, Summer Schools and Alumni Meetings.

Fig. 18: Gadgets with EUSMAT corporate design

3.5.2. Homepage

The new homepage under the URL www.eusmat.net was published in 2018 and is being continuously improved with the help of tracking tools such as google analytics. The homepage's goal is to further enhance communication with specific target groups such as (prospective) students, researchers, professors, alumni and industrial partners. Moreover, with the help of its own homepage, EUSMAT aims to increase brand awareness within Saarland University as well as on a national and international level. This homepage is visited very often (1.000-2.000 monthly visits from all over the world) and ranked very well in Google searches.

We also implemented a chatbot on our homepage, based on an artificial intelligence which automatically answers popular student's questions. The chatbot is being trained by the EUSMAT team who supervises the generated answers and, if necessary, corrects them so that the chatbot continuously improves its answers. This chatbot was made possible by the financial support of the DFH.

The homepage presents the different bachelor, master and doctoral programmes that EUSMAT offers. It also provides information about the different scholarship opportunities offered through its programmes.

The website hosts testimonials by former students and gives alumni the chance to be a part of the EUSMAT network and connect with each other. Furthermore, the homepage lists all the different partners that are part of EUSMAT's worldwide network such as partner universities, research centres and industry partners.

3.5.3. Public Relations

EUSMAT's PR activities include a joint newsletter with FuWe and MECS which is published every two years since 2010 as well as articles in scientific journals and magazines. Furthermore, EUSMAT has had several press releases every year in local newspapers, the website of Saarland University and in magazines (see annex for a complete list). Furthermore, EUSMAT activities have also been reported in the local TV and radio podcasts.

Ein Studium im Saarland als Tor zur Welt

Wer an der Saar-Uni Materialwissenschaften im Programm „Advanced Materials Science and Engineering" studiert, kann zwei Semester an einer anderen europäischen Hochschule lernen. Die Absolventen sind international gefragt.

VON JOACHIM WOLLSCHLÄGER

SAARBRÜCKEN Die 24-jährige Anna Vikhareva aus Tomsk in Russland weiß schon genau, was sie nach ihrem Master-Studium in den Materialwissenschaften machen will: „Ich will in Deutschland arbeiten. Das interessiert mich, weil die deutsche Wirtschaft führend in dem Feld ist", sagt sie. Ähnlich geht es der 26-jährigen Gabriela Schaab da Silva aus Brasilien, die sich auf Nano-Biomaterialien spezialisiert hat. „Gerade in diesem Feld ist die Forschung in Deutschland sehr weit", sagt sie.

Beide nehmen an dem Master-Programm in Materialwissenschaften und Werkstofftechnik (Amase) teil, das die Universität des Saarlandes gemeinsam mit drei Partner-Instituten in Barcelona, Nancy und Luleå (Schweden) ins Leben gerufen hat. Jeweils 30 bis 40 Teilnehmer aus aller Welt können pro Jahr bei diesem Programm mitmachen. Die Teilnehmer studieren jeweils an zwei Universitäten. Zwei Semester finden an der einen Uni statt, das dritte an der jeweils anderen. Beim vierten Semester, in dem sie ihre Master-Arbeit schreiben, sind die Teilnehmer frei in ihrer Wahl.

Koordinator des Programms ist die „European School of Materials" (Eusmat) an der Saar-Uni (Infokas-

Die Spanier Joan Morata Royes (l.), Raimon Sucarrats i Ollius (M.) und Nerea Lopez de A

Zweisprachig fit für den Arbeitsmarkt

Die Materialwissenschaft der Saar-Uni hat internationale Studiengänge im Angebot

Mit dem deutsch-französischen Studiengang École Européenne d'Ingénieurs en Génie Matériaux bietet die Saar-Uni Studenten der Materialwissenschaft und Werkstofftechnik die Möglichkeit, einen Teil des Studiums in Nancy zu verbringen. Die erworbenen Fremdsprachenkenntnisse eröffnen gute Chancen auf dem Arbeitsmarkt.

Doreen Kempf

Saarbrücken. Die Fachrichtung Materialwissenschaft und Werkstofftechnik der Universität des Saarlandes bietet ihren Studenten inzwischen seit 22 Jahren die Möglichkeit, ein binationales Studium aufzunehmen, seit einigen Jahren auch im Bachelor- und Masterbereich. Ein Beispiel ist der deutsch-französische Doppel-Bachelor-Studiengang École Européenne d'Ingénieurs en Génie Matériaux (EEIGM). Die Studenten beschäftigen sich zunächst an der Saar-Universität vier Semester mit der Belastbarkeit von Materialien wie Metall, Kunststoff und Glas und absolvieren ein sechswöchiges Praktikum in einem Betrieb. In den beiden folgenden Semestern setzen sie ihr Studium im französischen Nancy fort.

Auch Studentin Doreen Kempf (21) aus Blieskastel hat sich für den EEIGM-Studiengang entschieden, weil sie so ihre beiden Leidenschaften Naturwissenschaft und Sprachen vereinen kann. Im Anschluss an ihren Bachelor-Abschluss nahm sie den EEIGM-Master in Angriff und blieb ein weiteres Semester in Nancy. „Jetzt kann ich sagen, dass ich sehr gut Französisch spreche." Um ihre Fremdsprachenkenntnisse zu vertiefen, verbringt sie das kommende Wintersemester, ihr drittes Fachsemester im Master-Studiengang, an der Universität in Barcelona.

Die Berufschancen für Absolventen gelten wegen der Fremdsprachenkenntnisse, die im Studium vermittelt werden, laut der Saar-Universität als sehr gut. Der Bachelor-Studiengang ist nicht zulassungsbeschränkt. Die Uni empfiehlt Interessenten vor der Einschreibung allerdings ein Beratungsgespräch, in dem über den Ablauf des Studiums informiert wird. *rol*

www.
uni-saarland.de/campus/studium/studienangebot/az/eeigm-ba.html

Esa-Astronaut Maurer kehrt zu seinen Wurzeln zurück

SAARBRÜCKEN (byl) Für ihn war es eine Rückkehr zu den Wurzeln seiner wissenschaftlichen Ausbildung, für die Besucher der „European School of Materials" die Begegnung mit einem Prominenten. Der Esa-Astronaut Matthias Maurer besuchte am Freitagnachmittag eine Konferenz dieser Forschungseinrichtung auf dem Campus der Saar-Universität.

Der Saarländer legte den Grundstein seiner Karriere in Saarbrücken, wo er Materialwissenschaft bei Professor Frank Mücklich studierte. Als einer der ersten Studenten absolvierte Matthias Maurer den deutsch-französischen Doppel-Studiengang der Saar-Uni und der École Européenne d'Ingénieurs en Génie des Matériaux in Nancy sowie ein weiteres internationales Studium in Barcelona.

In Saarbrücken entwickelte der heutige Esa-Astronaut im Rahmen seiner Diplomarbeit das Material für extrem langlebige Zündkerzen-Elektroden. „Mein Studium an der Saar-Uni hat mich sehr geprägt. Bei Professor Frank Mücklich und den anderen Dozenten habe ich fachlich sehr gute und spannende Veranstaltungen besuchen dürfen", erklärt der frisch gekürte Esa-Astronaut.

Astronaut Matthias Maurer (links) und Frank Mücklich. FOTO: IRIS MAURER

Fig. 19: Examples of press articles in the Saarbrücker Zeitung

In 2018, EUSMAT drafted a design for a marketing campaign in cooperation with the state of Saarland for their free use. The campaign was centred around the international scientific aspect of EUSMAT by focusing on former Materials Science student Matthias Maurer who is now a successful astronaut.

Fig. 20: Designs for the marketing campaign on EUSMAT's international scientific aspect.

3.5.4. Further websites, journals and other forms of promotion

EUSMAT takes cares that the different programmes are visible on other specific websites, such as MastersPortal.eu, masterstudies.com (paid subscription), data base of international programmes of the DAAD (paid subscription), and the partner universities. The Atlantis, AMASE and DocMASE programmes are also published in special brochures of the DAAD that list international programmes in Germany. Since 2013, an article about the study programmes in Materials Science and Engineering at Saarland University, with emphasis on EUSMAT's activities, is published each year in the brochure of the German Materials Society (DGM), called DGM-Studienhandbuch.

3.5.5. Social Media

EUSMAT maintains four different social media channels: Instagram, Facebook, LinkedIn and YouTube. The EUSMAT team has been very active on Facebook (2.110 followers) since 2013 and also has a LinkedIn channel since 2017 and a YouTube channel

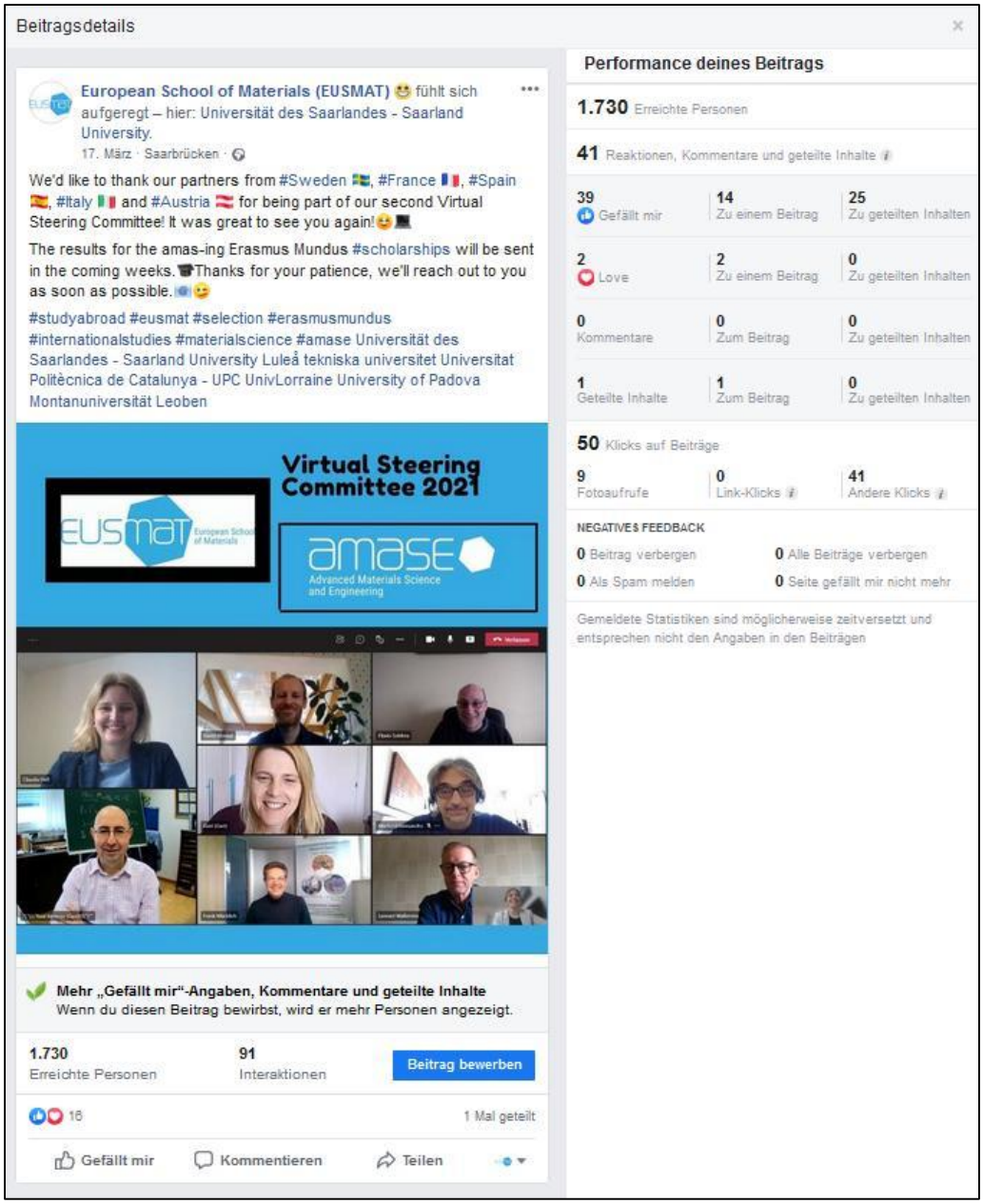

Fig. 21: Example of performance in EUSMAT's Facebook channel.

since 2019. On Instagram, EUSMAT was able to create a community of about 600 followers since the start of the channel in 2018.

Facebook is used to communicate events, student experiences, available scholarships, activities of former students as well as to share interesting articles for the community. Moreover, student and alumni groups were created to facilitate their interaction. Short videos and stories that ask the community to participate by voting or giving their opinion on a specific material science-related question are also used to increase interactivity and range.

On Instagram, younger people aged between 20-30 years represent the main target group. The most successful articles we were able to share with the Instagram community are about students and teachers (research) activities, the presentation of the different coordinators of the AMASE programme and the EUSMAT team as well as information around the application and student selection process. 218 contributions were already made. The highest range was obtained with a post on 3rd December 2020 which reached 18.107 people.

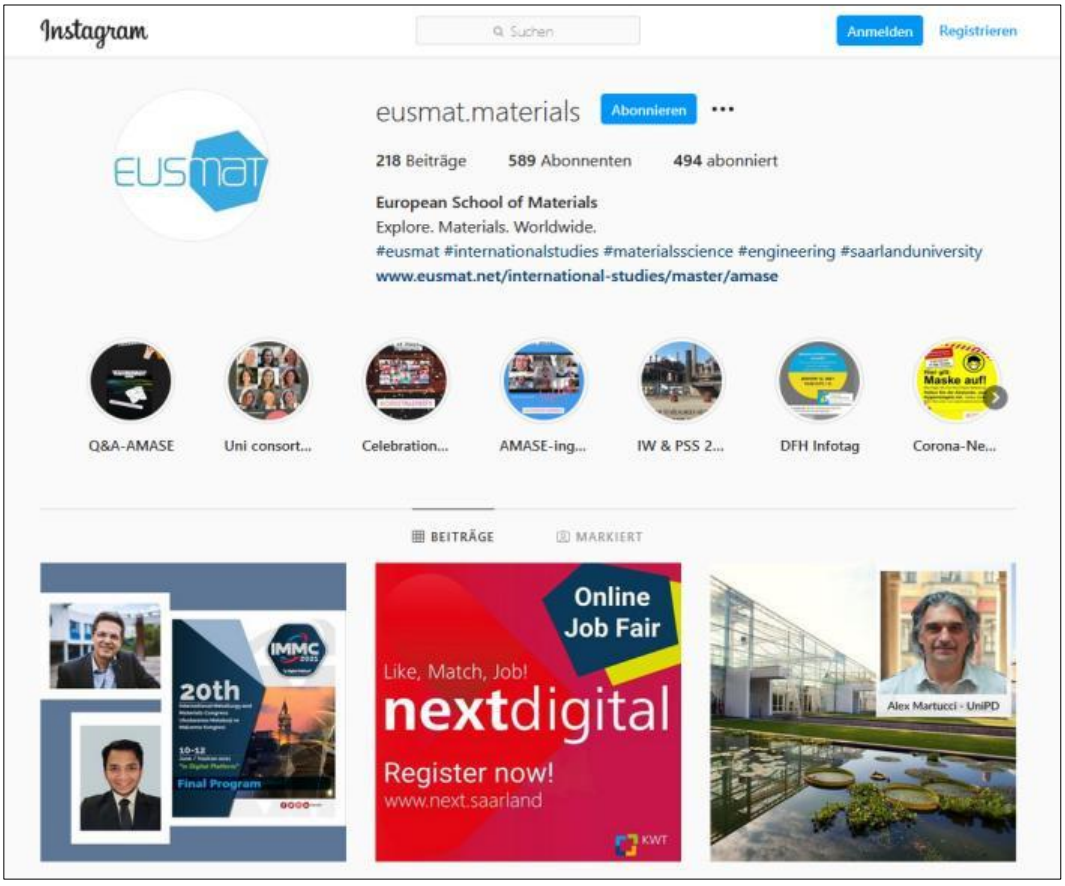

Fig. 22: EUSMAT's Instagram channel.

On LinkedIn, EUSMAT has 1.048 followers. Since the LinkedIn community usually already has a bachelor degree and people like to network on a professional level and inform themselves about the latest scientific advances in materials science, all professional updates are published in the form of field-related articles on this social media platform.

Our YouTube channel targets all age groups and plans to inform, teach, entertain and present the different study programmes, student life at the different universities, the application process, give insights on research activities and results, life after graduation, job opportunities, etc. The most popular video on our YouTube channel so far is the AMASE image video (see below) and has reached 252.877 impressions in the first 8 months that the video had been published thanks our Google Adwords campaign (see below).

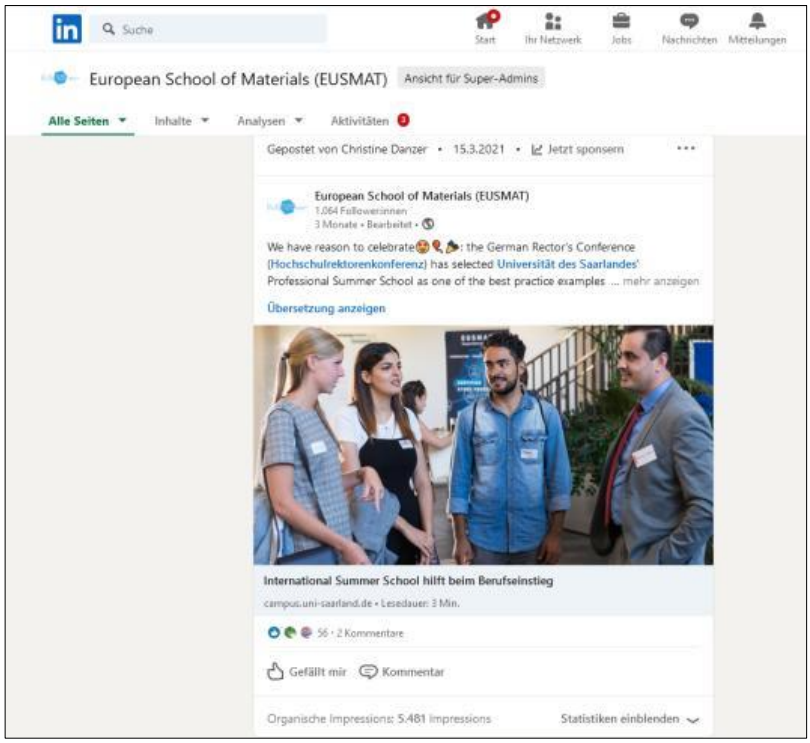

Fig. 23: EUSMAT's LinkedIn channel.

3.5.6. AMASE Image Video

An image Video of AMASE with subtitles in all languages of the consortium (English, German, French, and Spanish) was created in 2018 with the financial support of the Franco-German University as part of a project to promote digital and multi-media communication. Within this project, the video was promoted in the web through a Google-Adwords campaign. In 2021, the video was updated to include the two new partners of AMASE: the University of Padua and the Montanuniversität Leoben. The video is available on the homepage, Facebook and the EUSMAT-You Tube Channel. The average playback time of the video is 1:30 minute, which equals a 77, 7% spectator retention for this video.

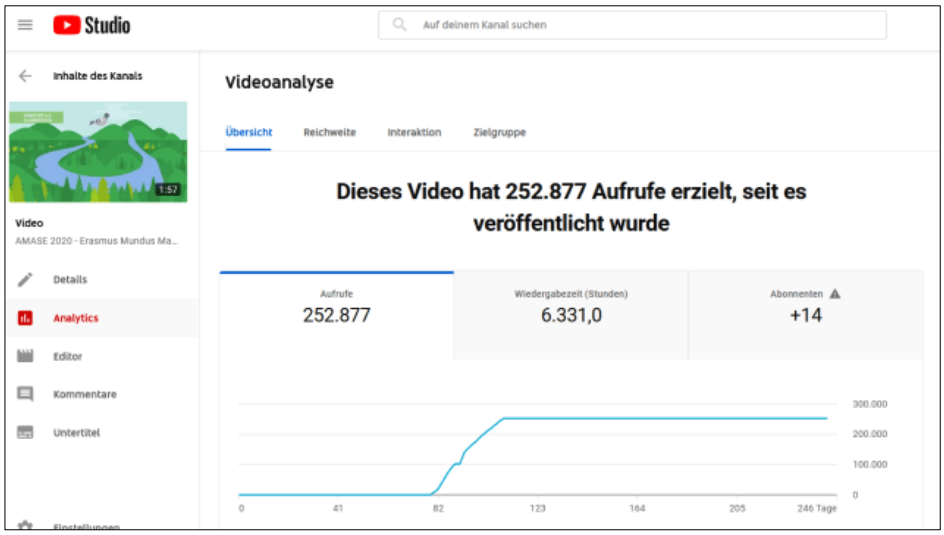

Fig. 24: EUSMAT's YouTube channel.

3.5.7. Campaigns

We commissioned a first Google-Adwords campaign to promote the image video of AMASE in 2019 with the goal of attracting more students from four target countries (Canada, USA, Switzerland and Austria), which was expected to reach self-financed candidates. The results from this campaign were then used for a second Google-Adwords campaign which targeted the USA, UK, Italy, Spain and Germany. Further campaigns will be done on LinkedIn and Twitter by UL and the Global Engagement Unit of UNIPD, responsible for international marketing.

3.5.8. Networking

To attract both European and non-European students for the different programmes, we involve our large network of partner institutions worldwide. Our partners support us in dissemination of the information of the programmes and in some cases in the selection of the candidates, since they help us understand the local education system and consequently select the best candidates. Currently, we send information about call for applications through 35 partners worldwide and we use to send information through different materials society worldwide, e. g. in Argentina, Brazil, Colombia, etc.

3.6. Qualification

One of the goals of EUSMAT is „the qualification of internationally deployable executives". Since 2008, a large number of student workers from different departments at Saarland University has supported EUSMAT as part of a large number of projects.

According to our philosophy, we try to compose the team as diverse as possible according to gender, nationality, individual study background, competencies and interests. On the one hand, EUSMAT assumes that employees perform particularly well and are satisfied when they can integrate their individual competencies into their work. On the other hand, our projects benefit greatly from this diversity. We employed student workers who studied intercultural communication, marketing, computer linguistics, business studies, history or informatics, just to give some examples. EUSMAT is convinced that the interdisciplinary cooperation with different university departments and the integration of student workers with expertise in their field of studies provides a significant advantage for the execution and success of innovative projects.

After finishing their studies, EUSMAT student staff members often continue their careers in international contexts. Some examples of working places are the European Employment Services (EURES), the IP management group Dennemeyer in Luxemburg, the Franco-German University, FWU Life Insurance Lux, and the globally acting IMC AG in the field of e-learning.

Trainee for office administration

In Germany, young people can opt for a dual 2-3 year training programme called "Ausbildung" after successfully graduating from school. In this programme, trainees alternate between learning theoretical content at school and gathering practical experience in a company, in this case EUSMAT.

The EUSMAT trainee is active in the following fields and, as a part of their traineeship, learns to complete these different tasks by themselves:

- Office management, invoice processing, reimbursement of student fees
- Database maintenance for the application procedure in the different study programmes
- E-Mail, letter and telephone communication with international students, PhD-students, cooperation partners and different administration offices at Saarland University

- Event management for international conferences, the EUSMAT Integration Week and Professional Summer School, the EUSMAT alumni meeting. This includes booking of suitable premises, obtaining offers for leisure activities and excursions, and organizing and planning various seminars and lectures within a series of events.
- Creation of admission documents for the new intake of students

Continuous training

In order to support the employees of EUSMAT in their work in the best possible way, the team members are given the opportunity to further their education within the scope of their work. In the last few years, employees have taken part in the following training courses (non-exhaustive list):

- Project management
- Increasing international mobility of STEM-students
- Virtual Exchange – Student-centred, transnational teaching and learning with projects
- Intercultural Competence – Arab world
- Intercultural communication – state of the art in research and practice
- Trends in online marketing
- Producing video clips with the smartphone
- Placing ads on Instagram and Facebook

3.7. Miscellaneous

International Deans Course Latin America

Since 2012, the Saarland University, together with the University of Alicante (Spain), offers a yearly course about management of university structures for young deans of universities in Latin America. Members of EUSMAT (Dr. Soldera, Dr. Heß and Dr. Suarez) participate regularly in this activity, offering the modules “University-Industry Cooperation in Research” and “University-Industry Cooperation in Teaching”.

Cooperation with Korea University of Technology and Education (KUT)

Based on previous contacts between Prof. Dr. Mücklich and Prof. Dr. Chung-Keun Kim from KUT, a Memorandum of Understanding for the exchange of students was signed between the two universities on 23.07.2009. Under this agreement, 17 Bachelor Students from the KUT carried out one-year exchanges doing research activities at different chairs of the department of materials science in Saarbrücken between 2010 and 2014. Students of the Saarland University and the EUSMAT programmes had the opportunity of participating in a summer school at the KUT. Three students participated in this event from 2017 to 2019.

4. EUSMAT in Numbers and Figures

4.1. Number of students participating in the EUSMAT programmes

Figure 25 presents the total number of students participating in EUSMAT's programmes. Students are included in the year in which they started their programme (AMASE, DocMASE) or when they did the first international exchange period (EEIGM, Atlantis Bachelor, I.DEAR). In a second column, only those students whose study included a part at Saarland University (UdS) are counted and, in a third column, the students who have obtained a degree from UdS are considered. Some programmes, like EEIGM and I.DEAR, may have students participating without the goal of obtaining a degree at Saarland University. Other students may have left the programme and therefore did not receive a degree.

Since 2005, **798 students** in total have participated in the different programmes, **577 students** were part of the programme **at Saarland University and 293 students obtained a degree from Saarland University**. **39 % of all students are female**, which is a

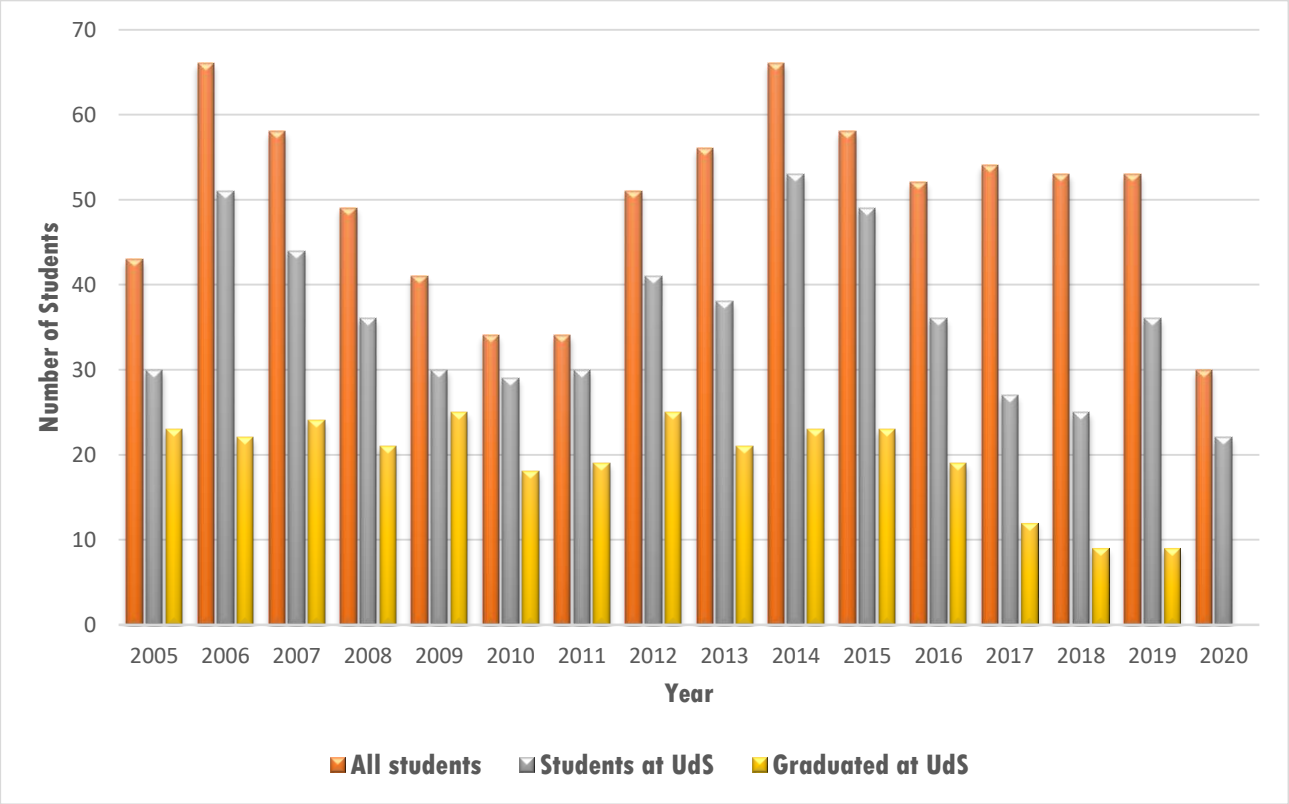

Fig. 25: Total number of students starting EUSMAT programmes each year: AMASE, DocMASE, Atlantis Bachelor, EEIGM, and I.DEAR.

high amount of female participation when compared to the average across national programmes in Germany in the same field, which is about 20 %.

4.2. PR-Activities of EUSMAT – Press Releases

4.2.1. FuWe-MECS-EUSMAT newsletter:

A periodical newsletter is jointly published by the Chair of Functional Materials, the Materials Engineering Center Saarland – MECS, and EUSMAT. The following articles on EUSMAT have been included in such newsletters:

Newsletter Nr 1 – 2010

- *EUSMAT koordiniert internationales Studium*

Newsletter Nr 2 – 2012

- *Neues Doktorandenprogramm für Materialwissenschaftler aus aller Welt*

Newsletter Nr 3 – 2014

- *Integration Week für neue AMASE-Studierende*
- *Netzwerk zwischen Lateinamerika und Europa*

Newsletter Nr 4 – March 2015

- *Förderung für internationale Projekte*
- *Netzwerk zwischen Lateinamerika und Europa*

Newsletter Nr 5 – April 2017

- *Erstes Netzwerktreffen von EUSMAT und „International Materials Research Meeting in the Greater Region"*
- *Gelungener EUSMAT-Workshop in Monte-video*

Newsletter Nr 6 – Mai 2019

- *Abschluss des CREATe-Netzwerks, Start von PPP-Brazil*
- *Netzwerkpreis für Dr. Flavio Soldera*
- *Karriereplanung für internationale Materialforscher*
- *EUSMAT und FuWe werden von indischer Botschafterin besucht*

Newsletter Nr 7 – Dezember 2020

- *EUSMAT: Neue Partner und weitere Erasmus Mundus-Finanzierung für AMASE*
- *Erfolgreiche EUSMAT-Mitarbeiterinnen*
- *Summer School 2019:Surface Engineering*
- *2. Internationales Netzwerktreffen von EUSMAT*

4.2.2. Other contributions in magazines

DGM-Studienhandbuch 2015 - 2021 – Annual issue with information on the degree programs in the subject area and a report on international opportunities for students.

Jahresmagazin Ingenieurwissenschaften – Im Fokus Werkstofftechnologien, Alpha Informationsgesellschaft mbH, Lampertheim, Oktober 2008

„Materialwissenschaft und Werkstofftechnik – Internationale Ausbildung für zukünftige Führungskräfte; Gründung der Europäischen Schule für Materialforschung an der Universität des Saarlandes"

Jahresmagazin Ingenieurwissenschaften – Im Fokus Werkstofftechnologien, Alpha Informationsgesellschaft mbH, Lampertheim, Oktober 2013

„Europäische Schule für Materialforschung (EUSMAT), International Materialwissenschaft studieren in Saarbrücken"

BMBF Werkstofftechnologien.de, Von Material zur Innovation, Eintrag der Studiengänge der Fachrichtung in Kompetenzkarte, 2021, https://www.werkstofftechnologien.de/service/kompetenzkarten

Saarland Marketing, Vorbereitung von Plakaten zur freien Nutzung, https://willkommen.saarland/partner/europaeische-schule-fuer-materialforschung-eusmat/

4.2.3. Press articles and press releases

2021 – 01. Juni, UdS Info Veranstaltung, *Kompetenzzentrum zur Kreislaufwirtschaft von Metallen und Werkstoffen nimmt Arbeit auf*

2021 – 11. März – Presse UdS: *Vorbild für andere Hochschulen: Summer School der Materialwissenschaft hilft beim Berufseinstieg* (https://idw-online.de/de/news764779)

2021 – 10. März - Campus UdS, *International Summer School hilft beim Berufseinstieg* (https://campus.uni-saarland.de/karriere/international-summer-school-hilft-beim-berufseinstieg)

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2018 – 23. Oktober, Saarbrücker Zeitung: *Ein Studium im Saarland als Tor zur Welt, Wer an der Saar-Uni Materialwissenschaften im Programm „Advanced Materials Science and Engineering" studiert, kann zwei Semester an einer anderen europäischen Hochschule lernen. Die Absolventen sind international gefragt.* (https://www.saarbruecker-zeitung.de/sz-spezial/hochschule/advanced-materials-science-and-engineering-programm_aid-34028485)

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2017 – 11. April, Saarbrücker Zeitung: *Esa-Astronaut Maurer kehrt zu seinen Wurzeln zurück*

2017 – 4. April, Saabrücker Zeitung: *Klassentreffen auf dem Campus, Die Saar-Uni will mit ihren Absolventen in Kontakt bleiben. Dafür sollen feste Strukturen für sogenannte Alumni-Aktivitäten etabliert werden. Beim Gründertreffen der Materialwissenschaftler kamen Ehemalige sogar aus den USA nach Saarbrücken.*

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2016 – 26. Juli, BMBF Kooperation International*: Die Europäische Union fördert den europäischen Masterstudiengang "Materialwissenschaft und Werkstofftechnik" ab 2017 für drei weitere Jahre mit bis zu 2,9 Millionen Euro* (https://www.kooperation-international.de/aktuelles/nachrichten/detail/info/eu-foerderung-des-europaeischen-masterstudiengangs-materialwissenschaft-amase/)

2016 – 25. Juli, Saarbrücker Zeitung, *Millionenförderung für Masterstudiengang Materialwissenschaft, Die Europäische Union fördert den europäischen Masterstudiengang Amase (Advanced Materials Science and Engineering) an der Saar-Uni ab 2017 für drei weitere Jahre mit bis zu 2,9 Millionen Euro. Das hat die Hochschule mitgeteilt.*

2016 – 25. Juli, UdS Presse-Info: *Millionenschwere Förderung für europäischen Masterstudiengang Materialwissenschaft AMASE* (https://idw-online.de/de/news656756)

2014 – 22. August, BMBF Kooperation International: *Materialwissenschaft und Werkstofftechnik, Die Universität des Saarlandes bietet in der Materialwissenschaft und Werkstofftechnik gleich mehrere internationale Studiengänge an. Das Masterprogramm Amase vernetzt Universitäten in vier europäischen Ländern und lockt Studenten aus der ganzen Welt an. Jeden Sommer kommen die neuen Studenten für eine Integrationswoche nach Saarbrücken.* (https://www.kooperation-international.de/aktuelles/nachrichten/detail/info/universitaet-des-saarlandes-vernetzt-internationale-studenten-der-materialwissenschaft-und-werkstofft/)

2014 – 21. August, UdS Presse-Info: *Saar-Uni vernetzt internationale Studenten der Materialwissenschaft und Werkstofftechnik* (https://idw-online.de/de/news600255)

2013 – 13. August, Saarbrücker Zeitung: *Zweisprachig fit für den Arbeitsmarkt, Die Materialwissenschaft der Saar-Uni hat internationale Studiengänge im Angebot*

2012 – 23. Dezember – UdS Presse-Info / Idw: *Grants for international master's or doctorate in materials science* (https://idw-online.de/en/news513484)

2012 – 21. Dezember – UdS Presse-Info / Idw: *Stipendien für internationalen Master oder Promotion in der Materialforschung* (https://idw-online.de/de/news513423)

2012 – 4. September, Saarbrücker Zeitung: *Zwei Länder, zwei Titel, Materialwissenschaftler können an der Saar-Uni einen internationalen Doktor machen*

2011 – August, Campus Magazin UdS: *Studenten aus aller Welt zieht es in die Saarbrücker Materialforschung*

2011 – 06. September, abitur-uni-studium.de: *Europäische Schule für Materialforschung der Saar-Uni erhält erneut hohe EU-Förderung*

2011 – 06. September, Saarbrücker Zeitung: *Vier Länder, vier Sprachen, ein Studium, Das Studium Materialwissenschaft vernetzt die Saar-Universität mit Hochschulen in Frankreich, Spanien und Schweden*

2011 – 06. September, Bildungsexperten Netzwerk (on-line): *Europäische Schule für Materialforschung der Saar-Uni erhält erneut hohe EU-Förderung* (https://www.bildungsxperten.net/press-ticker/europaische-schule-fur-materialforschung-der-saar-uni-erhalt-erneut-hohe-eu-forderung/)

2011 – 06. September: Presse UdS/idw – Informationsdienst Wissenschaft: *Europäische Schule für Materialforschung der Saar-Uni erhält erneut hohe EU-Förderung* (https://idw-online.de/de/news?print=1&id=439216)

2010 – 20. September – Campus Extra Ausgabe II/2010: *Studenten der Saar-Uni bauen flotten Flitzer in den USA - Die Saar-Uni bietet mehrere internationale Studiengänge an – Ein Student berichtet von seinen Erfahrungen in Schweden und den USA*

2010 – 23. Juli, Kunstoffe.de: *Saar-Uni erhält europäische Graduiertenschule für Materialwissenschaft und Werkstofftechnik* (https://www.kunststoffe.de/a/news/saar-uni-erhaelt-europaeische-graduierte-271823)

2010 – 22. Juli, UdS Presse Info: *Saar-Uni erhält europäische Graduiertenschule für Materialwissenschaft und Werkstofftechnik* (https://idw-online.de/de/news380404)

2010 – 30. Juni, UdS Presse-Info: *Saar-Uni bietet europäischen Studiengang der Materialwissenschaft und Werkstofftechnik*

2009 – 07. April, Saarbrücker Zeitung: *Saar-Schmiede für Führungskräfte, Europäisches Master-Studium Amase lockt Menschen aus allen Ländern nach Saarbrücken*

2008 – 01. Juli, Saarbücken Zeitung: *Neuer Doppel-Bachelor für Ingenieure in Saarbrücken*, *An der Universität des Saarlandes in Saarbrücken startet im Wintersemester 2008/2009 ein neuer Doppel-Bachelor-Studiengang für angehende Ingenieure.*

2008 – 13. Mai, UdS Presse-Info: *Aktuelle Entwicklungen in den Ingenieurwissenschaften*

2008 – 29. April, Saarbrücker Zeitung: *Studiengang aus Saarbrücken ist Spitze, Akademischer Austauschdienst und Stifterverband zeichnen Materialwissenschaft aus*

2008 – 28. April, UdS Presse-Info: *Saarbrücker Masterstudiengang zählt zu den Top 10 der internationalen Studiengänge in Deutschland* (https://idw-online.de/de/news257707)

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2006 – 29. August, Saarbrücker Zeitung, *Austauschdienst fördert Elite-Studiengang, Der europäische Studiengang Advanced Materials Science and Engineering (Amase) der Saar-Uni wird seit kurzem vom Deutschen Akademischen Austauschdienst (DAAD) mit 1,3 Millionen Euro gefördert. Amase-Koordinator Professor Frank Mücklich erklärt im Gespräch mit SZ-Mitarbeiterin Jeanine Wein, was mit der Förderung geschieht.*

2006 – 03. Juli, Presse UdS: *Weitere 1,3 Millionen Euro Förderung für künftige Material-Experten ohne Grenzen* (https://idw-online.de/de/news166639)

2005 – 8. Juni, Presse UdS: *Materialwissenschafts- Studium international* (https://idw-online.de/de/news116010)

2005 – 15. April, Presse UdS*: Erasmus Mundus: Internationaler Masterstudiengang in der Werkstoffwissenschaft, Elite-Ausbildung für künftige Material-Experten ohne Grenzen* (https://idw-online.de/de/news108352)

4.3. Cooperation partners of EUSMAT

Following institutions are currently partners of EUSMAT in the different active projects:

4.4. List of all EUSMAT projects with third party funding

Nr.	Funder	Funding Scheme	Reference number	Titel of the Project	Cooperation Partners	Start	End	Total Grant	Grant EUSMAT	Requested Grant	Available Grants
1	EU	Erasmus Mundus Masters Courses	FPA 2005-0022 SGA 2005-2221 SGA 2006-1519 SGA 2007-1565 SGA 2008-1394 SGA 2009-1483	Joint European Master Programme in Advanced Materials Science and Engineering – AMASE	Lulea University of Technology (SE), University of Lorraine (FR), Polytechnical University of Catalonia (ES)	01.08.2005	30.09.2011	5.278.000 €	5.278.000 €	5.209.732 €	
2	EU	Erasmus Mundus Masters Courses	FPA 2012-0184 SGA 2012-2402 SGA 2013-1987 SGA 2014-0772 SGA 2015-2031 SGA 2016-1933	Joint European Master Programme in Advanced Materials Science and Engineering – AMASE	Lulea University of Technology (SE), University of Lorraine (FR), Polytechnical University of Catalonia (ES)	24.10.2011	30.09.2018	2.698.200 €	2.698.200 €	2.650.800 €	
3	EU	EMJMD	GA 2016-2055	Joint European Master Programme in Advanced Materials Science and Engineering – AMASE	Lulea University of Technology (SE), University of Lorraine (FR), Polytechnical University of Catalonia (ES)	01.09.2016	30.09.2021	2.923.000 €	2.923.000 €	2.923.000 €	
4	EU	EMJMD	GA 619784	Joint European Master Programme in Advanced Materials Science and Engineering – AMASE	Lulea University of Technology (SE), University of Lorraine (FR), Polytechnical Univ. of Catalonia (ES), University of Padova (IT), Montanuniversität Leoben (AT)	01.09.2020	01.10.2026	4.388.000 €	4.388.000 €	1.097.000 €	3.291.000 €
5	EU	FP7-PEOPLE-2009-IRSES	247524	"NanoCom-Network" Advanced Processing and Characterisation of Micro and Nano Composites	European Synchrotron Research Facility (FR), Helmholtz-Zentrum Berlin für Materialien und Energie GmbH (DE), Technische Universität Wien (AT), Comision Nacional de Energía Atómica (AR), Univer. Nacional de Río Cuarto (AR), University of Sao Paulo (BR), Universidad de Concepción (CL)	01.06.2010	31.05.2013	99.000 €	87.866 €	87.866 €	
6	EU	Erasmus+: Erasmus Mundus Joint Doctorate (EMJD)	FPA 2011-0020 SGA 2011-1549 SGA 2012-1634 SGA 2013-1454 SGA 2014-0697 SGA 2015-1620	Joint European Doctoral Programme in Advanced Materials Science and Engineering - DocMASE	Lulea University of Technology (SE), Linköping University (SE), University of Lorraine (FR), Polytechnical University of Catalonia (ES)	01.08.2011	31.10.2019	5.002.300 €	1.205.600 €	4.886.974 €	

Nr.	Funder	Funding Scheme	Reference number	Titel of the Project	Cooperation Partners	Start	End	Total Grant	Grant EUSMAT	Requested Grant	Available Grants
7	DAAD	Graduate School Scholarship Programme (GSSP)		Graduate School Scholarship Programme (GSSP) - DocMASE - Joint European Doctoral Programme in Advanced Materials Science and Engineering		01.10.2014	30.09.2020	205.780 €	205.780 €	200.180 €	5.600 €
8	DAAD	Graduate School Scholarship Programme (GSSP)		Graduate School Scholarship Programme (GSSP) - DocMASE - Joint European Doctoral Programme in Advanced Materials Science and Engineering		01.10.2016	30.09.2022	198.165 €	198.165 €	169.765 €	28.400 €
9	EU	FP7-PEOPLE-2012-IRSES	318903	"SUMA2-Network" - Surface Modifications for Advanced Applications	Université de Lorraine (FR), Fraunhofer Institut IWS (DE), Linköpings University (SE), Univ. Nacional de Río Cuarto (AR), Universidad Nacional del Comahue (AR), Universidad Tecnológica Nacional (AR), Pontificia Univ. Católica de Chile (CL), Universidade de Caxias do Sul (BR)	01.01.2013	31.12.2016	184.800 €	184.800 €	183.099 €	
10	EU	H2020-MSCA-RISE-2014	RISE-GA Nr. 644013	CREATe-Network - Processing and Characterization of Advanced Nano-Composites for resource efficient Applications and Technologies	Leibniz-Institut für Neue Materialien (DE), Univ. Politecnica de Catalunya (ES), AB Sandvik Coromant (SE), Steinbeis Forschungs- und Innovationszentren GMBH, MECS (DE), Nanoforce Technology Limited (UK), Universidad Católica del Uruguay (UR), Universidad de Concepción (CL), Instituto de Investigaciones en Ciencia y Tecn. de Materiales - INTEMA (AR), Council for Scientific and Industrial Research - CSIR (ZA), Universidade de Sao Paulo (BR), Georgia Institute of Technology (US)	01.01.2015	31.12.2018	639.000 €	639.000 €	508.050 €	
11	DAHZ-CUAA	I.DEAR	D/14/07555	I.DEAR-Materials 2014 - 2018 - Deutsch-Argentinisches Austauschprogramm in Materialwissenschaft und Werkstofftechnik	Univ. Nacional de Mar del Plata (AR), Friedrich-Alexander-Universität Erlangen-Nürnberg (DE)	15.08.2014	15.08.2018	246.810 €	246.810 €	216.516 €	

Nr.	Funder	Funding Scheme	Reference number	Titel of the Project	Cooperation Partners	Start	End	Total Grant	Grant EUSMAT	Requested Grant	Available Grants
12	DAHZ-CUAA	I.DEAR	D/14/07555	I.DEAR-Materials 2018 - 2022 - Deutsch-Argentinisches Austauschprogramm in Materialwissenschaft und Werkstofftechnik	Univ. Nacional de Mar del Plata (AR), Friedrich-Alexander-Universität Erlangen-Nürnberg (DE)	16.08.2018	15.08.2022	185.244 €	185.244 €	45.172 €	140.072 €
13	DFH	PhD-Track	PhD-02-14	German/French Graduate School in Materials Science and Engineering	Université de Lorraine (FR)	01.10.2014	30.09.2019	100.000 €	50.000 €	40.301 €	
14	DFH	PhD-Track	PhD02D-014	German/French Graduate School in Materials Science and Engineering	Université de Lorraine (FR)	01.10.2019	30.09.2024	100.000 €	50.000 €	15.000 €	35.000 €
15	DFH	Wissenschaftlichen Veranstaltung für Nachwuchswissenschaftler	NBV-05-17	DocMASE Summer School - Moderne Materialcharakterisierungsmethoden und 3D-Gefügeanalyse	Université de Lorraine (FR)	10.09.2017	15.09.2017	15.000 €	15.000 €	8.360 €	
16	DFH	Wissenschaftlichen Veranstaltung für Nachwuchswissenschaftler	NBV-22-19-I	DocMASE Summer School - Oberflächentechnik: Oberflächenstrukturierung und funktionelle Beschichtungen	Université de Lorraine (FR)	23.09.2019	27.09.2019	14.100 €	14.100 €	10.679 €	
17	DFH	Marketing	UFA-BMBF_COMNUM-1_2018	Imagekampagne zur Steigerung der Studierendenzahlen in den deutsch-französischen Studiengängen der Materialwissenschaft und Werkstofftechnik	Université de Lorraine (FR)	24.08.2018	31.12.2018	14.000 €	14.000 €	14.000 €	
18	DAAD	Alumni-Programm AA 2j ab 16	Projekt-ID: 57219325	1. Internationales Netzwerktreffen der Europäischen Schule für Materialforschung		01.01.2016	31.12.2017	58.439 €	58.439 €	46.307 €	
19	DAAD	Alumni-Programm AA 2j ab 18	Projekt-ID: 57392615	2. Internationales Netzwerktreffen der Europäischen Schule für Materialforschung		01.01.2019	31.12.2019	46.733 €	46.733 €	35.715 €	
20	DAAD	Alumni-Programm AA zweijährig ab 2021	Projekt-ID: 57561234	3. Internationales Netzwerktreffen der Europäischen Schule für Materialforschung		01.01.2021	31.12.2022	56.054 €	56.054 €	0 €	56.054 €

Nr.	Funder	Funding Scheme	Reference number	Titel of the Project	Cooperation Partners	Start	End	Total Grant	Grant EUSMAT	Requested Grant	Available Grants
21	DAAD	PPP Programme des projek-tbezogenen Personen-austauschs - Brasilien	Projekt-ID: 57390937	Thermomechanical processes of emerging metallic materials	Universidade de São Paulo (BR), Pontifícia Univ. Católica de Mina (BR), Serviço Nacional de Aprendizagem Industrial – Centro Integrado de Manufatura e Tecnologia - SENAI/CIMATEC (BR)	01.01.2018	31.12.2019	30.844 €	30.844 €	14.050 €	
22	DAAD	Programme des projekt-bezogenen Personen-austauschs (PPP) ab 2021 - USA	Projekt-ID: 57565100	Deep Materials Microstructure Characterization	Carnegie Mellon University (US)	01.01.2021	31.12.2022	29.868 €	29.868 €	0 €	29.868 €
23	EU / Staatskanzlei Saarland	Interreg V-A FR-B-DE-LU (Großregion)	Nr. 050-4-08-126	FAFil - Additive Fertigung durch Drahtaufschmelzung	Institut de Soudure Association (FR), Université du Luxembourg (LU), CRITT Techniques Jet Fluide et Usinage (FR), Université de Liège (BE), Pôle de Compétitivité MATERALIA (FR), Centre de Recherche Métallurgique - CRM (BE), CENAERO (BE)	15.01.2018	14.01.2022	1.754.409 €	207.630 €	37.861 €	169.769 €
24	EU / Staatskanzlei Saarland	Interreg V-A FR-B-DE-LU (Großregion)	Nr. 045-4-08-105	PULSATEC - Anwendung von Oberflächenbehandlungstechnologien durch gepulstes Plasma an komplexen 3D-Oberflächen und Formen	Université de Lorraine (FR), Luxembourg Institute of Science and Technology (LU), Centre de Recherche Métallurgique - CRM (BE), Universite de Liege (BE),	01.10.2018	30.03.2022	1.115.586 €	278.983 €	0 €	278.983 €
25	UdS - Internationalisierungsfonds	Call for Flagship Projects (Förderlinie 3)		Evaluation/Analyse und Verstetigung der Integration Week und Professional Summer School von EUSMAT sowie Implementierung einer Integration week für I.DEAR/ATLANTIS		01.06.2018	30.04.2019	7.544 €	7.544 €	7.544 €	
26	UdS - Internationalisierungsfonds	Förderlinie 3: Call for Flagship Projects		Studierendenmobilität MINT		01.10.2019	30.09.2021	16.216 €	16.216 €	16.216 €	