

IMPACT

Establishing the Bologna Structure with Master Programmes at Chalmers

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Summary

When Chalmers implemented 44 new international Master programmes in a Bologna structure the project IMPACT was established with financing from the Chalmers foundation. The project running time was in the first round 2007-2009. The main objective of the project was to establish internationally competitive and attractive programmes for national as well as international students. The students graduating from the programmes must be competitive in an international job market. Early in the project 11 top-level goals for the project were developed in a bottom up procedure. Aiming at these goals about 100 pedagogic projects are developed, implemented and evaluated with a very strong engagement from teachers and Departments in Chalmers. For the effective progress of the project very smooth, transparent and effective administrative, application and report (web based) routines were developed. In the project around 90 % of the resources were used by direct development work or training of staff in English presentation. Every Department /Master programme has in a continuous process in a dialogue with the project management prioritised between the top-level goals for their own effort, in their programmes. In each project the focus was on one or more top-level goals. The steering committee early focused on the immediate training of teachers in the “teaching in English” process. The focus was not only on how to speak English in front of students or to translate existing education material correctly, but also to present the material in a pedagogical way. The project will be evaluated in several ways; through presentations, project reports, workshops, student evaluation, interviews and so on.

Introduction

Chalmers early decided to transform and implement the first and second cycle education to the Bologna model with a three year Bachelor and a two year International Master programme. All students starting their Bachelor since 2004 have been following the first cycle and in 2007 the first students entered the second cycle, in which all Master level studies are organised in international Master programmes. This is part of the long term strategic development towards a full integration of the Bologna process for higher education. The Bologna process aims to establish a European area of higher education by 2010 and the objectives are to

- Establish a system of easily transferable accessible and comparable degrees (Bachelor, Master, Doctoral) (3+2+3)
- Establish a European Credit Transfer System (ECTS)
- Promote mobility
- Promote cooperation within Europe concerning quality assurance

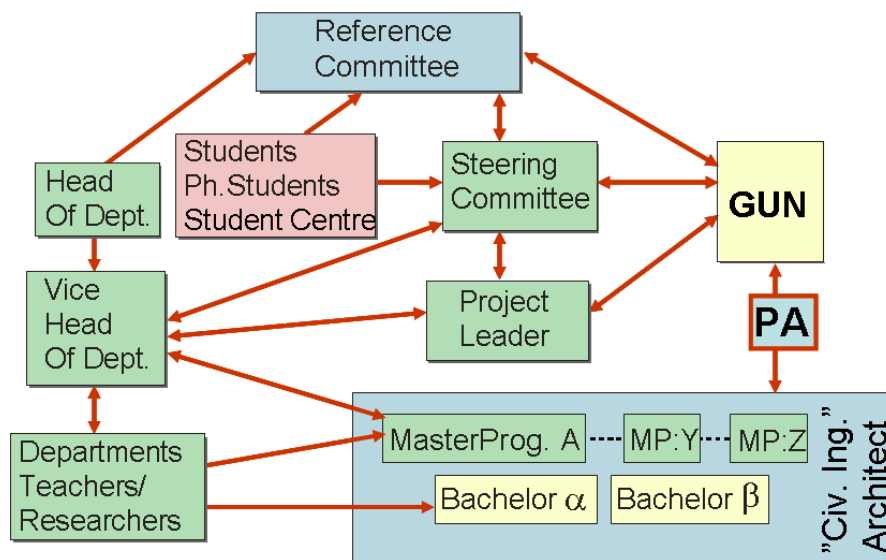
- Promote a European dimension in higher education.
- Promote Life Long learning
- Actively engage students in the development

The main ideas within the Bologna agreement are best reviewed in the homepage of the process. The early strategic decision at Chalmers started a very active and intense period for the staff (teachers, and other people involved in the development and implementation process) at Chalmers. The first period no extra financing was introduced into the system outside normal course development money which had the implication that the job had to be done in parallel with other obligations such as research and teaching. Early on, everybody involved in the process realised that this drastic change needed significant amounts of resources for a successful development and implementation process and a long term quality assurance (international competitiveness) of the programmes. The departments together with the strong support from Chalmers leadership put together an application for the development of 44 Master programmes at 16 departments and sent that application to the Chalmers Foundation. This strong support from the whole Chalmers was the driving force for the project together with the acute need for development resources for the programmes. The application was awarded 30MSEK for three years for the development and implementation process.

Organisation

The project is organised with a steering committee, reference committee and project group. The members are spread over all parts of Chalmers with expertise in sustainable development, pedagogy, leadership, etc. The organisation can best be viewed in the picture where also IMPACT project is set as part of the whole undergraduate education system at Chalmers. GUN is the “Grundutbildningsnämnd” and PA is Program directors.

Project Organisation



Project Process

Much of the resources within the project were directed towards applications from the departments describing project ideas with focus on the IMPACT goals developed. The applications were reviewed by experts in the field and some were accepted and provided financing for one year. Application and reporting of the projects were done in a web based portal with full transparency which also doubles as project documentation. The project reports were reviewed by the steering committee and some were revised according to suggestions from the committee. This provides comprehensive documentation of what has been done in the project as a whole. The main focus areas of the 2007 / 2008 efforts within the IMPACT project were:

- Powerful coordination of the programmes with bachelor, bachelor engineering programmes and with research schools.
- Strengthening the coupling within and between MP – courses and areas, - red thread strengthening;
- Ensuring that diversity and sustainable development are implemented in the programmes and their structure.

For the year 2008/2009 the efforts were also directed to the coordination of Master programmes with research schools, and the surrounding society/industry together with the development of a Master thesis (6 months and 12 months) structure involving components such as research facilities/industry and so on. The English competence development (with evaluation report) is best described by the documentation on the homepage (<http://www.chem.chalmers.se/impact/projekt.htm>) but the invitations for the courses (Teaching in English I and II) are also added last in this document. Magnus Gustafsson from the Centre for Language and Communication is the author of this part.

Aim and Goals

The following top-level goals were developed early in a bottom up development process:

1. Develop internationally competitive Master's Programmes with clear goals for improving the knowledge and competence of students.
2. Coordinate the Master's Programmes with Bachelor-, Bachelor Engineering- and other Master's Programmes and with graduate schools in a clear and well structured way.
3. Improve the connection within programmes by means of well defined learning outcomes and more visible common themes in the programmes.
4. Deliver all programmes and courses in English, using a pedagogy designed for active and life-long learning.
5. Ensure that the issues of diversity and sustainable development are considered in the delivery of the Master's programmes.
6. Strengthen the teachers' competence in terms of pedagogy and English communication
7. Provide new learning resources in English that are more than mere translations of existing material.
8. Set up a format for feed-back from important stakeholders.
9. Design a system of assessment for the Master's programmes to be used in long term quality assurance.
10. Set up common arenas for experience sharing and/or other means of support for the promotion of pedagogical development.

11. Institute adequate administrative routines for programme support and, for example quality assured admissions.

Evaluation and Quality Assurance

The IMPACT project is documented and evaluated in several ways:

- The sub-projects reports and applications (23 in 2007, 52 in 2008, expected 30-40 in 2009)
- The steering committee has evaluated and commented/feedback on all the reports from 2007.
- In Dec. 2007 all the vice heads of the departments answered a questionnaire about the project development. The results show some very important and supportive result:

*82% emphasise that IMPACT has improved the competitiveness of Chalmers Master programmes;
91% agree that the resources have been used effectively (54% very effectively);
100% state that information in IMPACT was most satisfactory;
91% mean that IMPACT strongly contributes to the fulfilment of IMPACT goals.*

These results are very supportive for the project leadership and steering committee.

Results from the questionnaire also show that the departments strongly support knowledge platforms and more effective evaluation and quality control. These results influence the direction of IMPACT focus in later project application procedure.

In mid-2008 IMPACT initiated a self-evaluation of all the Master programmes were all programme directors answered around 20 questions modelled around the IMPACT goals. The results of the self-evaluations have been used in the yearly follow-up meetings with the Chalmers engineering education and in the group interviews (see below). The same self-evaluation will be done in 2009 as well so that we can see if we are moving in the right direction.

All projects within the 2008 application process are quality assured through group interviews with project leaders, department vice heads and IMPACT direction. The projects are grouped by departments and for each project, a short description of the project, possibilities and strengths, problems, the contributions to IMPACT's top-level goals and possibilities of knowledge transfer to other parts of Chalmers is discussed. For each department we go through the self-evaluations of the associated Master programmes and discuss the application round for projects 2009. At the time of writing, about 50% of the interviews have been performed.

Interesting Projects within IMPACT

In this part we present four examples (out of 75, 2007/08) of IMPACT projects focused around:

- A) Collaboration between programmes*
- B) Diversity and sustainable development*
- C) Individual preparation course*
- D) Stakeholder involvement and feedback.*

NOTE: The vice Head Björn Engström of the Department of Civil and Environmental Engineering was awarded the Chalmers pedagogic price this year

A: Collaboration between CSE Masters programmes – Computer Science and Engineering

Project Goals

The overall goal of the project was to improve the quality (depth and breadth) of the learning within the Master education **without increasing the resources**. More detailed goals are:

- Increase the collaboration within and between the teaching teams / research groups.
- Better contact between students and between teachers on neighbouring programmes.
- Make better use of the competence of the research groups and strengthen the connection to research.

Results:

- Synchronised and shared tracks between five programmes (placement of electives, shared courses between programmes, updated course plans, reducing overlap, guest lectures, etc.)
- Established contacts between teacher groups have been strengthened.
- Guest lectures bring specific extra knowledge to students of related programmes. Almost all the CS-ALL courses are all taught by researchers active in this field. A package of master courses suitable for Doctoral education has been specified.
- CS-ALL has started a mentor programme where teachers serve as first-year mentors, to give students individual guidance.
- Besides the curricular problems we also realised that all programmes need administrative support from the CSE Department and the Study Centre, for common routines: information flow, admission, publicity, and master's theses.
- Scheduling and coordination of the prerequisites is not merely an administrative matter. It has the purpose to give the key courses the proper places in the respective programmes.
- Several external / international activities: Swedish initiative in Resilient Computing, participation in two European Workshops on Education in Resilient Computing, participation in an Erasmus-Mundus application on Distributed Systems Engineering, and (P. Jansson) participation in an Erasmus-Mundus application on Foundations and Applications of Software Technology.

Added value

Creative meetings between students on different specialisations / programmes. Cross-functional teams enable better learning. Better economy (fewer, larger courses) means larger scope for a commitment to quality. More stable curriculum for the research-level education. More advanced Master courses. Reduced time for the research level education is achieved. Students from different programmes meet in shared courses. Group work in projects and programming assignments are common in the courses, and there is a clear correlation between active participation in the group work and the exam results. Our set of larger compulsory courses makes it possible to afford also smaller elective courses. The overview of Master / Doctoral sharing of courses has only just begun, but looks promising.

Partners

Dept. of Computer Science and Eng. (CSE), Networks and Distributed Systems (NDS), Computer Science – Algorithms, Languages and Logic (CS-ALL), Secure and Dependable Computer Systems (SDCS), Eng. Mathematics and Computational Science (EMCS), Communication Eng. (ComEng), Bioinformatics and Systems Biology (BISB). Software Eng. and Technology (SET).

B: Mapping of diversity aspects with the aim of developing learning strategies for sustainable development – Chemical and Biological Engineering

Project Goal

All students independent of gender, ethnic background must be welcome and comfortable at Chalmers. They shall also actively participate and contribute to the discussions and development of the subjects. Teaching and learning in the subject Sustainable development deals in its context about understanding systems in many dimensions. The ability to have and understand different perspective of this is essential for effective learning. Communication across borders of any kind is an important part of this learning process. Sometimes the ability can be described as to change perspective between different geographic, generational, scientific and cultural perspectives. The heterogeneous students groups in the Master programmes provide this opportunity to support these discussions and learning processes. Teaching platforms, making use of the heterogeneous structure of the student group, will be developed in terms of a new learning strategy. The course in Global Chemical Sustainability will be the pilot course for this project.

Process

Working seminars with teachers with much applied practical things on how to add values of ethnic perspectives in assignments were performed.

Workshops on perspective and diversity were arranged at Chalmers.

In depth interviews with students with heterogeneous background were performed.

Added Value

Diversity can, correctly used, be means for gaining better quality in the learning process. This knowledge can be used in all Master programmes at Chalmers (and elsewhere). In the same process the discrimination problem will become non-existent in the programme in a constructive way.

Evaluation

Results for in depth interviews, questionnaires, workshops will be reported and discussed in written and oral form. The student participation in the evaluation is essential.

C: Individual Preparation Course – Civil and Environmental Engineering

Project Aim

Provide the students with aid for self studies, (lectures and assignments in Mathematics, MATLAB and Signal Processing) using developed and intelligent learning material. The developed material and computer facilities can be combined in different ways to reach the individual goals of every student entering the Master programme. The self study package is produced and implemented in the programme 2007 and will be evaluated in 2008. The Individual preparation course was first implemented during the fall of 2007/08 and will be run also next year.

Process

Development of the material is the main part of the project according to plan. The work is done by staff at the division of Applied Acoustics.

Added Value

The material supports a form of learning that is individual where the students can take greater responsibility for their own learning process and do that stage wise. This is a step towards “advanced learning” and life long learning. The teacher workload will be decreased and the teachers can act more like supervisors, mentors in the process with increased teaching and learning quality. This project shows how Chalmers, through new learning strategies, can decrease the possible differences for individual students coming from many nations in the world entering the programmes at Chalmers.

Evaluation:

The course is evaluated through a continuous quality assurance procedure.

D: Improved industry connections within the Master programme Radio and Space science – Radio and Space Science

Project Goal

The aim of the project is to improve the connections between the industry and the academy in terms of the research oriented Master programme at the department. This way we can show for applying students how the industry interaction will increase their learning and motivation for studying this research area. The possibility of a future job in relevant industry sectors is also included in the project. The project is performed in connection with the industries Saab Space, Saab Microwave Systems, Volvo Technology in Göteborg and SP “Technical Research Institute of Sweden” in Borås. A number of industry related project and assignments will be developed in the projects, sometime with supervisors from industry as well as from academy. Industry visits, demonstration as well as invited lectures will be used in the project.

Added Value

Improved industrial application methods will be implemented in the programme. Which in it self will increase the pedagogic structure of the programme. Updating of the courses to state of the art in different areas. Better contacts between industry and students.

Evaluation

Questionnaires, increased number of applicants to the programmes. Evaluation of the courses - Department of Radio and Space Science.

Conclusions

The IMPACT project must so far be considered as a very successful project. It has through a careful design and implementation procedure, including a bottom up process, provided resources to a great number of well formulated, performed and implemented pedagogic project for the overall aim of developing strong and internationally competitive Master Programmes at Chalmers. This project will strongly increase the possibility for Chalmers to compete with their Master programmes in an international perspective. This project also shows that Chalmers considers the Master Programmes as a strategic focus area linking Bachelor and Doctoral education with the aim of being a major player in the European higher education area. It also emphasises the importance of cooperation and coordination of the Master programmes with industry and the surrounding society. The strong focus on sustainable development for Chalmers (Chalmers strategy document) is also further strengthened through the realisation of IMPACT. The final evaluation of the project success will be measured by indicators such as number of applicants, evaluation of the Master programmes, student satisfaction and attractiveness of our graduated students on an international job market.

Acknowledgement

The Chalmers foundation is gratefully acknowledged for their financial support. Many thanks also to all the project leaders, teachers and vice head of the departments for their strong efforts and all other people at Chalmers who has contributed in other ways to the IMPACT project and especially Magnus Gustafsson for the enthusiastic contribution in the English courses.

References

Bologna: <http://www.europaeum.org>

Bologna: <http://www.ond.vlaanderen.be/hogeronderwijs/bologna/>

Chalmers strategy document http://www.chalmers.se/en/sections/about_chalmers/chalmers_strategies

Chalmers pedagogic price. <http://chalmersnyheter.chalmers.se/Article.jsp?article=12206>

Homepage IMPACT <http://www.chem.chalmers.se/impact/>

Presentations of the project - <http://www.chem.chalmers.se/impact/present.htm>

Homepage for Applications and Reports (examples from 2007)

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https://impact.portal.chalmers.se/research/?year=2007

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Research projects

2006 | 2007 | 2008

Displaying 1-50 of 75 research projects
< 01 02 >

Acronym	Title	Department	Reported	Updated	Status	Template
S2_ADM	Admin	Signaler och system	22 Oct	09 Jul	Rejected	[Fri ansökan..
AQM	Advanced Quantum Mechanics	Fundamental fysik	16 Oct	08 Jul	Accepted	[Ansökan 200..
TillMek-FA2	Aktiv vibrationsstyrning Labb	Tillämpad mekanik	18 Oct	09 Jul	Accepted	[Fri ansökan..
TillMek-FA2, kompletteringar	Aktiv vibrationsstyrning Labb	Tillämpad mekanik	03 Dec	09 Jul	Rejected	[Fri ansökan..
MMT-1	Amping-up course moments/projects	Material- och tillverknings teknik	18 Oct	08 Jul	Accepted	[Ansökan 200..
APEX	AnPassning av EXempel till en mångfaldssituation	Energi och miljö	19 Oct	08 Jul	Accepted	[Genus/mångf..
BrandM	Brand management	Teknikens ekonomi och organisation	19 Oct	08 Jul	Accepted	[Genus/mångf..
TillMek-GM1	Breaking cultural barriers in automotive education - (Auto-Culture)	Tillämpad mekanik	19 Oct	09 Jul	Accepted	[Genus/mångf..
TillMek-GM1, kompletteringar	Breaking cultural barriers in automotive education - (Auto-Culture)	Tillämpad mekanik	03 Dec	09 Jul	Rejected	[Genus/mångf..
SolveIT	Concepts for Problem-Solving Training on Different Levels	Data- och informationsteknik	18 Oct	18 Jun	Accepted	[Ansökan 200..
CoArchMas	Cooperating masterprogrammes in Architecture	Arkitektur	18 Oct	08 Jul	Accepted	[Ansökan 200..
Desus	Design for sustainable development - utveckling av hållbarhet i olika kontexter	Arkitektur	18 Oct	08 Jul	Accepted	[Hållbar utv..
BoM-DSSU	Diskussionsforum som stöd i undervisning (DSSU)	Bygg- och miljöteknik	19 Oct	08 Jul	Accepted	[Fri ansökan..
Diversity@CSE	Diversity@CSE - the quality of being different	Data- och informationsteknik	19 Oct	08 Jul	Rejected	[Genus/mångf..

IMPACT-project application

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Register new project

Edit Project | Permissions

Project

Title

Acronym

Short acronym or code used to identify this project

Status

Save as draft
 Submit for review
 Save as rejected
 Save as accepted
 Save as finished

Project leader

VPref

Fortsättning? (ange tidigare projektkronym eller "Nej")

Created 2008-10-07

Categories

Samverkan - master/doktorandkurser Add

Project info

Please enter project name and identification code

Please note that only administrators can modify the application after it has been submitted for review.

Administrators may change the project date, this affects which index-page tab the projects gets sorted under

IMPACT-project application

- Ansökan 2009 pott 2: Avnämarperspektiv
- Ansökan 2009 pott 1: Programutveckling
- Ansökan 2009 pott 3: Hållbar utveckling
- [Hållbar utveckling 2008 - avslutad]
- [Ansökan 2007 - avslutad.]
- [Fri ansökan 2008 - avslutad]
- [Genus/mångfald 2008 - avslutad]

Administer

Logged in

Claes Niklasson

Logout

Categorization

Please select issues in a SINGLE category for this

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Teaching in English (Magnus Gustafsson, Centre for Language and Communication, Chalmers)

IMPACT invites teachers at Master programmes to further education

IMPACT is a Chalmers board project for development of Chalmers new Master programmes. As a part of this development work, IMPACT and the Centre for Language and Communication now offers a second run of the proficiency oriented course 'Teaching in English I'. The course is intended for teachers who will be teaching at Master programmes and are employed at Chalmers.

The course is free of charge for participating teachers – IMPACT finances it – but departments finance the time required for teachers to attend the course.

The course is a language course oriented towards teaching in English at the various Master programmes at Chalmers. It is offered to 20 participants in the second quarter starting in the second week with four-hour sessions on Thursdays 8 – 12 for a total of 6 weeks and closing in December. The format of the course involves seminar discussions as well as time for individual supervision and individual work in the language lab. The course also includes reading, writing, and presentation assignments and it will require time outside of the scheduled sessions. On completing the course, participants will receive a 2-credit certificate outlining the course and its scope.

Course facilitators: Becky Bergman and Andreas Eriksson

Start of course: Second week of the second quarter, Thursday, November 1

Application: By e-mail to Becky Bergman at Centre for Language and Communication becky@chalmers.se no later than October 1.

Admission: If necessary, interviews will be conducted with applicants and a diagnostic test will be done prior to admission.

First come, first served but IMPACT supports wide distribution across the various Master programmes at Chalmers.

Additional information about the course: becky@chalmers.se; 031-772 2644, 0736-42 97 28

“Teaching in English I: Academic Writing and Speaking in English as a Second Language”

- Learning outcomes involve improving English grammar proficiency; enhancing written and oral proficiency for learning situations; and analyzing texts and presentations for assessment practices
- Assignments include course relevant assignments such as mini-presentations, course descriptions, articulation of learning objectives, assignment instructions, exam questions, and design of visuals
- Learning activities involve seminar discussions, proficiency oriented exercises and mini-activities, individual work in the lab and individual supervision
- Diagnostic testing will be used for a needs analysis and to design individual learning outcomes

Teaching in English II (Magnus Gustafsson, Centre for Language and Communication, Chalmers)

IMPACT invites teachers at Master programmes to further education

IMPACT is a Chalmers board project for development of Chalmers new Master programmes. As a part of this development work, IMPACT now offers the second step in the course 'Teaching in English' in collaboration with the Centre for Language and Communication. The course is intended for teachers who will be teaching at Master programmes and are employed at Chalmers.

The course is free of charge for participating teachers - IMPACT finances it – but departments finance the time required for teachers to attend the course.

The course is offered as a seminar oriented towards teaching in English and adapting teaching and learning activities at the various Master programmes at Chalmers. Starting in September, it is offered to 20 teachers during the fall. After an introductory meeting, the seminar runs three full Thursdays during the fall and closes on a fifth half-day seminar to close the course in mid-December. Apart from the seminars and workshop activities with meetings every third week, the course also includes individual supervision and time to work on an individual development project. The course is time-consuming with reading and writing assignments and it will require time outside of the scheduled seminars. On completing the course, participants will receive a 3-credit certificate outlining the course and its content. Furthermore, the course content and scope qualify it not only as a language oriented course but also as an educational development course and it has been granted a 2-credit status in the higher education diploma issued by Professor Michael Christie with CKK at the IT-University.

Course facilitators: Magnus Gustafsson and Neill Thew.

Start of course: Thursday, September 27 at 13.15 and the course closes on December 6

Application: By e-mail to Magnus Gustafsson at Centre for Language and Communication magusta@chalmers.se no later than September 3.

Prerequisites: Good English proficiency or prior participation in 'Teaching in English I'.

Admission: If necessary, interviews will be conducted with applicants and personnel managers at the respective departments.

First come, first served but IMPACT supports wide distribution across the various Master programmes at Chalmers.

Additional information about the course: magusta@chalmers.se; 031-772 5815; 0709-68 79 82.

“Teaching in English II: Adapting teaching and learning activities”

- Learning outcomes involve enhancing one's ability to adapt teaching and learning activities to new conditions, exploring alternative assessment methods; increasing student responsibility; working actively with critical reading and writing-to-learn activities
- With the overall context of teaching in English to non-native speakers of English, course content is geared towards constructive alignment in a learning perspective; communicating objectives, assignment design, assessment schemes, self and peer assessment, critical reading, writing-to-learn, peer learning, lecturing, supervision, feedback, and teacher-teacher support
- Learning activities involve seminar discussions, workshop activities, pursuing a project relevant to one's practice, peer observations and supervision
- Assignments include pursuing one's project, articulating or interpreting the learning objectives of one's course context, designing and revising learning activities for one's course context, designing assessment schemes and criteria for one's course context