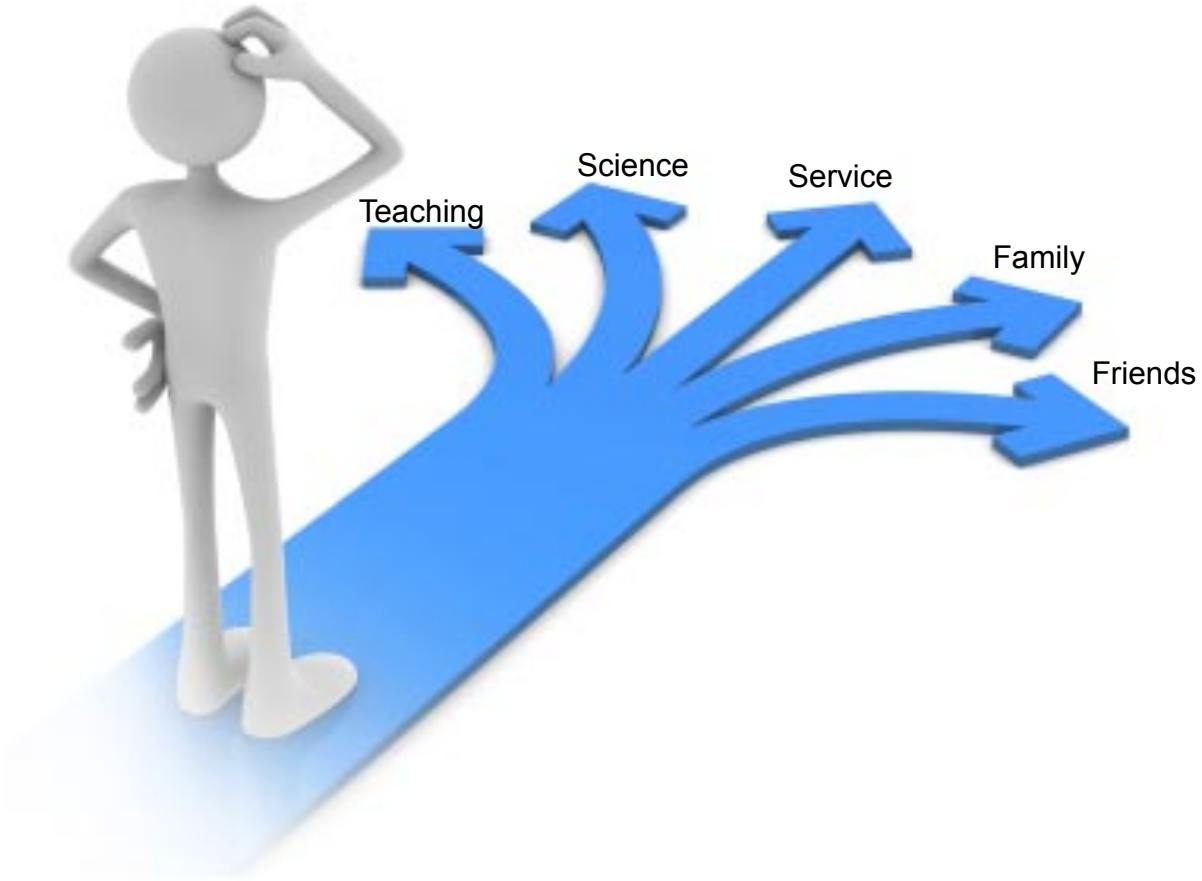
Aalto University
School of Engineering

Learning and Teaching in Higher Education

Development of Teaching Comptetence in Tenure Track

Aalto University
School of Engineering



Motivation

Intrinsic motivation refers to motivation that is driven by an interest or enjoyment in the task itself, and exists within the individual rather than relying on external pressures or a desire for reward. Students are likely to be intrinsically motivated if they:

- attribute their educational results to factors under their own control, also known as autonomy
- believe they have the skills to be effective agents in reaching their desired goals, also known as self-efficacy beliefs
- are interested in mastering a topic, not just in achieving good grades

Extrinsic motivation refers to the performance of an activity in order to attain an outcome, whether or not that activity is also intrinsically motivated. Extrinsic motivation comes from outside of the individual. Common extrinsic motivations are rewards (for example money or grades) for showing the desired behavior, and the threat of punishment following misbehavior. Competition is in an extrinsic motivator because it encourages the performer to win and to beat others, not simply to enjoy the intrinsic rewards of the activity. A cheering crowd and the desire to win a trophy are also extrinsic incentives.

Good athletes are found to have both qualities… Why?

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ENG: Promotion requirements
Tenure track /Assistant Professor Level 2

Research
The overall objective is to discern if the individual has demonstrated the ability to pursue research independent of the initial supervising professor or team.

- International visit planned or completed (6 months minimum)
- Regularly submitting grant applications with some evidence of success
- High quality publications independent of previous group / supervisor
- Recruitment of at least one doctoral student
- Realistic assessment of own work and understanding of “excellence” in own field

Teaching
The overall objective is to discern if the individual has demonstrated the desire and potential to become an effective university instructor.

- Teaching portfolio (Completeness, Clarity and Quality)
- Has contributed to teaching at Aalto (typically 2-3 courses/year)
- BS and MS supervision
- Pedagogical studies in progress

Service
The overall objective is to discern if the individual has potential to integrate into the Aalto Community cooperate with Aalto Stakeholders and serve the International Scientific Community

- Service plan which demonstrates and understanding of service possibilities and assessment of one’s own skills
- Participation in some activities (department-level committee, member of an international committee, …)

ENG: Promotion requirements
Tenure track /Associate Professor Tenured

Research
The overall objective is to discern if the individual has demonstrated the ability to become an established international-level researcher

- Regularly receives research grants
- Preparation of competitive grant applications
- Consistency and increasing quality of publications
- Recruitment of at least several doctoral student
- Evidence of scientific impact (citations)
- Statements from external experts: consensus that the individual has potential to become an established international-level researcher

Teaching
The overall objective is to discern if the individual has demonstrated effective teaching and mentoring skills.

- Evaluation from OATR “very good” required
- Mentoring of one doctoral student to completion
- Pedagogical studies completed

Service
The individual must demonstrate service in one or more of the areas: within the Aalto Community, to the International Scientific Community and/or to Aalto Stakeholders

- The extent and quality of service is satisfactory with respect to goals set by the department head

ENG: Promotion requirements
Tenure track /Full Professor

Research
The overall objective is to discern if the individual has demonstrated his/her status as a recognized international-level researcher (some of these items may need to be modified if the role is focused on education and an "excellent" evaluation is received from OATR, however, this should be considered as an exception)

- Has the research portfolio developed to include new or multi-disciplinary topics
- Development in the number and quality of publications
- Evidence of growth as an international network leader (international positions of trust, editorial board membership, invited talks, etc..)
- Evidence of scientific impact (number of highly cited articles)
- Statements from external experts: consensus that the individual has achieved the level of an international-level researcher

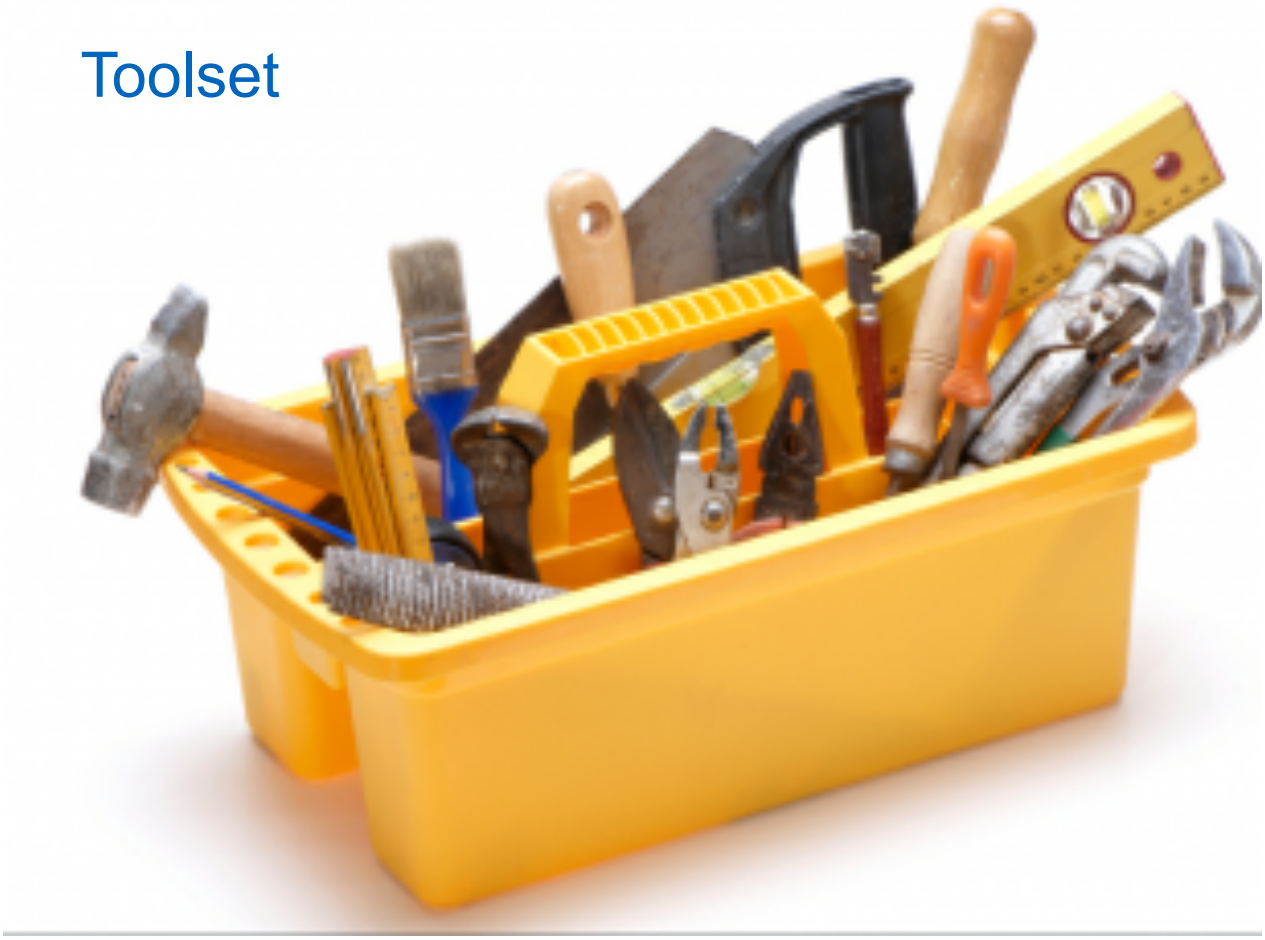
Teaching
The overall objective is to discern if the individual has demonstrated effective teaching and mentoring skills.

- Evaluation from OATR "very good" required
- Consistent mentoring of doctoral students and post doc researchers

Service
The individual must demonstrate service in one or more of the areas: within the Aalto Community, to the International Scientific Community and/or to Aalto Stakeholders

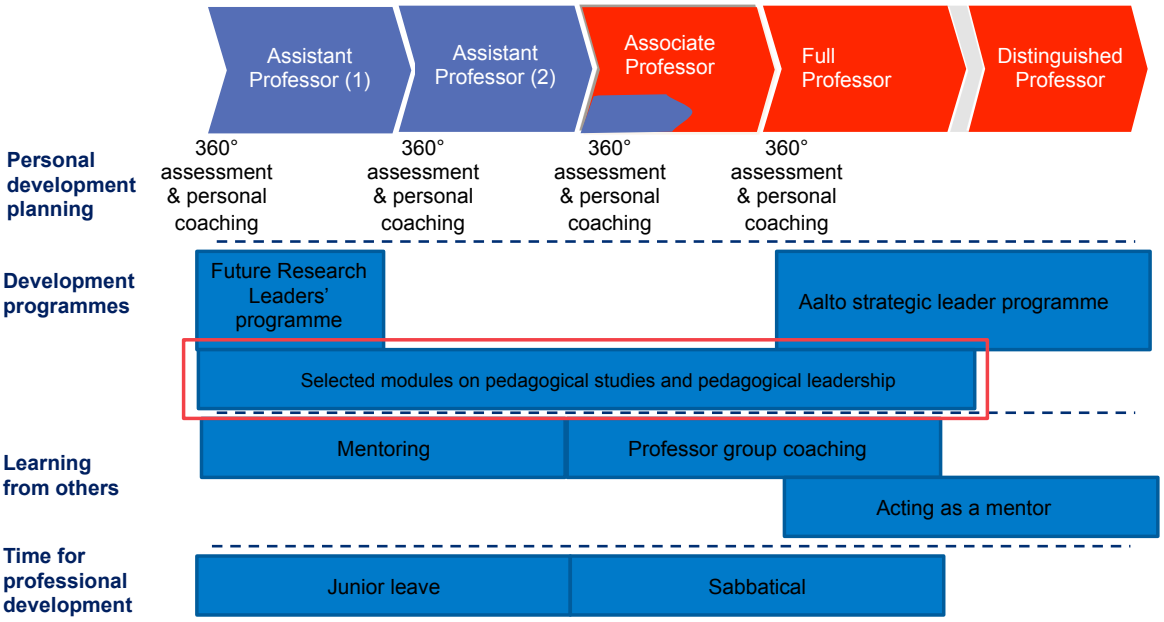
- The extent and quality of service is satisfactory with respect to goals set by the department head

Toolset



Competence development support for tenure track

Use the training available and think about timing



Generic time allocation for tenure track levels

Time and energy is limited

Fixed term
Permanent

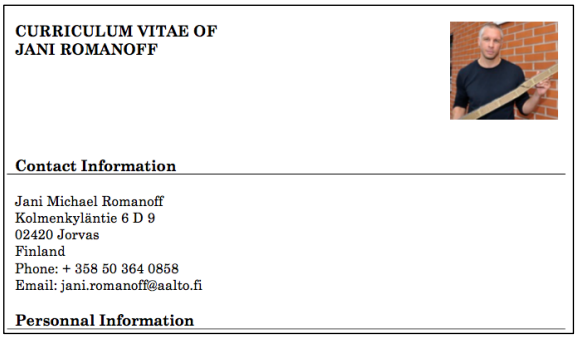
	Assistant Professor (1)	Assistant Professor (2)	Associate Professor	Full Professor	Distinguished Professor
1 Research / artistic and professional work	65% *+/-10%*	60% *+/-10%*	50% *+/-10%*	40% *+/-15%*	Negotiable
2 Teaching	30% *+/-10%*	30% *+/-10%*	30% *+/-10%*	30% *+/-15%*	30% *+/-15%*
3 Activity in Scientific Community and Academic Leadership	5% *+5%*	10% *+/-5%*	20% *+/-10%*	30% *+/-15%*	Negotiable

Key principles

- Research emphasis high in the beginning to obtain research portfolio
- Teaching relatively constant to maintain required teaching scale and senior professors in touch with students
- Contribution for academic leadership and collaboration increases with seniority through increased leadership, committee membership and societal interaction
- Mandatory teaching for Distinguished Professors, otherwise work profile negotiated

CV vs. Portfolio

- CV is a must for people with academic education
  - Collection of your professional data
  - Creates a profile of you
  - Is a starting point for any process in career: recruitment, promotion etc.
- Portfolio is extended CV which is good to have
  - Self-reflective description of your past experiences and future directions
  - Indicates your strength and weaknesses and actions undertaken
  - Says much more about you than CV
  - Is information needed for any major step in career



CURRICULUM VITAE OF
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Personnal Information

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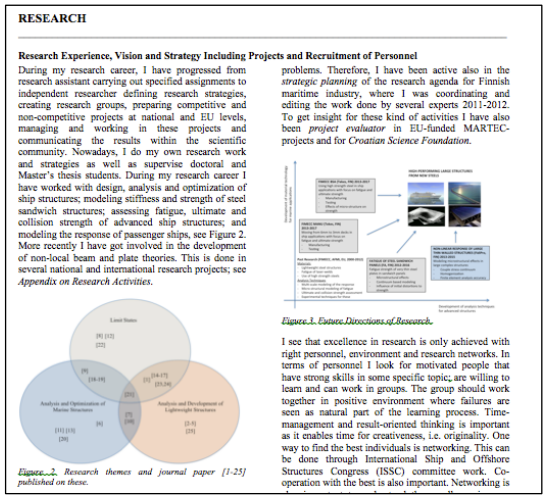

RESEARCH

Research Experience, Vision and Strategy Including Projects and Recruitment of Personnel

During my research career, I have progressed from research assistant carrying out specified assignments to independent researcher defining research strategies, creating research groups, preparing competitive and non-competitive projects at national and EU levels, managing and working in these projects and communicating the results within the scientific community. Nowadays, I do my own research work and strategies as well as supervise doctoral and Master's thesis students. During my research career I have worked with design, analysis and optimization of ship structures; modeling stiffness and strength of steel sandwich structures; assessing fatigue, ultimate and collision strength of advanced ship structures; and modeling the response of passenger ships, see Figure 2. More recently I have got involved in the development of non-local beam and plate theories. This is done in several national and international research projects; see *Appendix on Research Activities*.

Figure 2. Research themes and journal paper [1-25] published on these.

problems. Therefore, I have been active also in the *strategic planning* of the research agenda for Finnish maritime industry, where I was coordinating and editing the work done by several experts 2011-2012. To get insight for these kind of activities I have also been *project evaluator* in EU-funded MARTEC-projects and for *Croatian Science Foundation*.

Figure 1. Future Directions of Research.

I see that excellence in research is only achieved with right personnel, environment and research networks. In terms of personnel I look for motivated people that have strong skills in some specific topic, are willing to learn and can work in groups. The group should work together in positive environment where failures are seen as natural part of the learning process. Time-management and result-oriented thinking is important as it enables time for creativeness, i.e. originality. One way to find the best individuals is networking. This can be done through International Ship and Offshore Structures Congress (ISSC) committee work. Co-operation with the best is also important. Networking is

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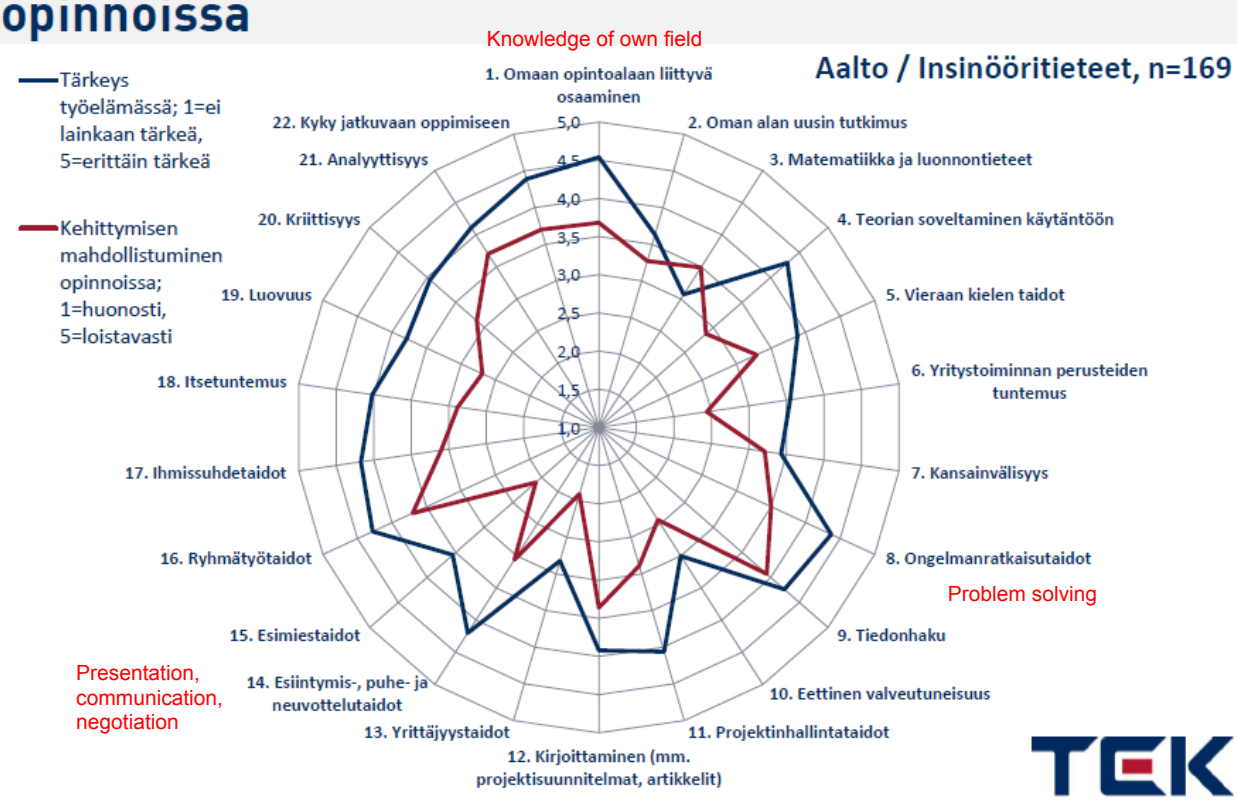
Osaamisten tärkeys ja niiden kehittyminen opinnoissa



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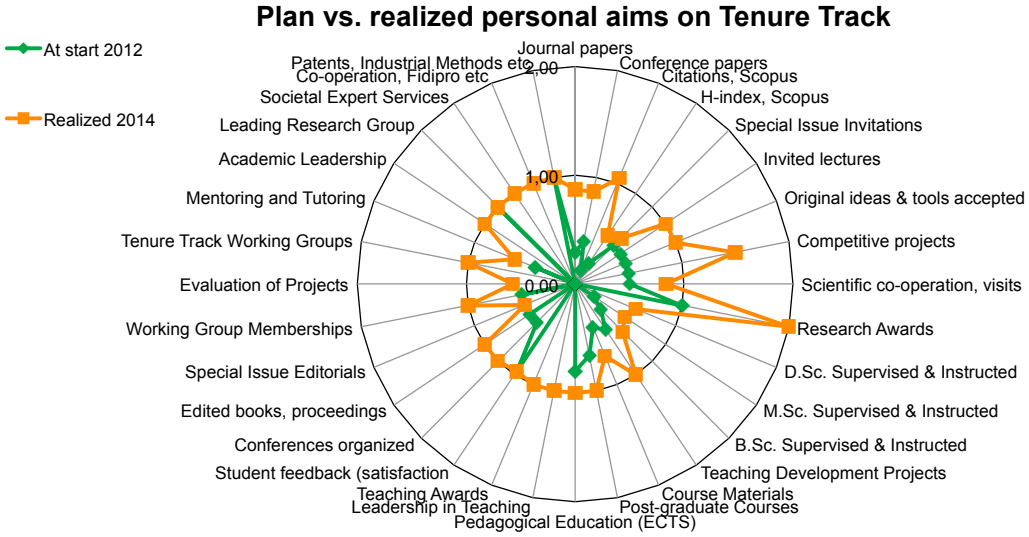
TEK
TEKNIIKAN AKATEEMISET

Setting the Goals in Practice



Setting the Goals in Practice

Personal Aim of Tenure Track February-2012 - December 2014
Jani Romanoff
Status 22.01.2014

		By Numbers			Scaled by 2015 Goals		
		At start 2012	Realized 2014	Associate Professor at end of 2018	At start 2012	Realized 2014	Comments
Research	Journal papers	11	33	38	0,29	0,87	1 own + 1 for each doctoral student
	Conference papers	18	39	45	0,40	0,87	2 own + 1 for each doctoral student
	Citations, Scopus	22	173	164	0,13	1,05	Steady increase
	H-index, Scopus	3	7	13	0,23	0,54	Steady increase
	Special Issue Invitations	5	6	10	0,50	0,60	
	Invited lectures	1	2	2	0,50	1,00	LIWEM, SNAME
	Original ideas & tools accepted	1	2	2	0,50	1,00	Homogenization, non-local parameter
	Competitive projects	1	3	2	0,50	1,50	
	Scientific co-operation, visits	3	5	6	0,50	0,83	Texas A&M once more in FidiPro + something else
	Research Awards	1	2	1	1,00	2,00	
Teaching	D.Sc. Supervised & Instructed	0	3	5	0,00	0,60	1 per year
	M.Sc. Supervised & Instructed	11	29	53	0,21	0,55	6 per year
	B.Sc. Supervised & Instructed	7	13	21	0,33	0,62	2 per year
	Teaching Development Projects	2	4	4	0,50	1,00	Doctoral education
	Course Materials	3	5	7	0,43	0,71	M.Sc.: Stochastic processes, Ship Structures & Construction
	Post-graduate Courses	2	3	3	0,67	1,00	Renew the methodology course
	Pedagogical Education (ECTS)	20	25	25	0,80	1,00	This is required: doctoral education
	Leadership in Teaching	0	1	1	0,00	1,00	This is enough at this stage for Associate Professor
	Teaching Awards	0	1	1	0,00	1,00	This is enough at this stage for Associate Professor
	Student feedback (satisfaction %)	82	82	85	0,96	0,96	This is balancing issue between research and education
Scientific Society Activity	Conferences organized	1	2	2	0,50	1,00	This is enough at this stage for Associate Professor
	Edited books, proceedings	1	2	2	0,50	1,00	This is enough at this stage for Associate Professor
	Special Issue Editorials	0	1	2	0,00	0,50	This is enough at this stage for Associate Professor
	Working Group Memberships	2	4	4	0,50	1,00	ISSC should continue, new period, WEGEMT
	Evaluation of Projects	0	4	7	0,00	0,57	One per year, gives insight to engineering SotA
	Tenure Track Working Groups	0	2	2	0,00	1,00	One per 2 years
	Mentoring and Tutoring	4	6	10	0,40	0,60	One per year, gives insight to teaching
	Academic Leadership	0	1	1	0,00	1,00	This is enough at this stage for Associate Professor
	Leading Research Group	1	1	1	1,00	1,00	This is enough at this stage for Associate Professor
	Societal Expert Services	0	1	1	0,00	1,00	SRA of Marine Technology 2012 is enough at this stage
	Co-operation, Fidipro etc	0	1	1	0,00	1,00	Howabout ERC and Geers/Eindhoven
	Patents, Industrial Methods etc	1	1	1	1,00	1,00	One software at this stage is enough

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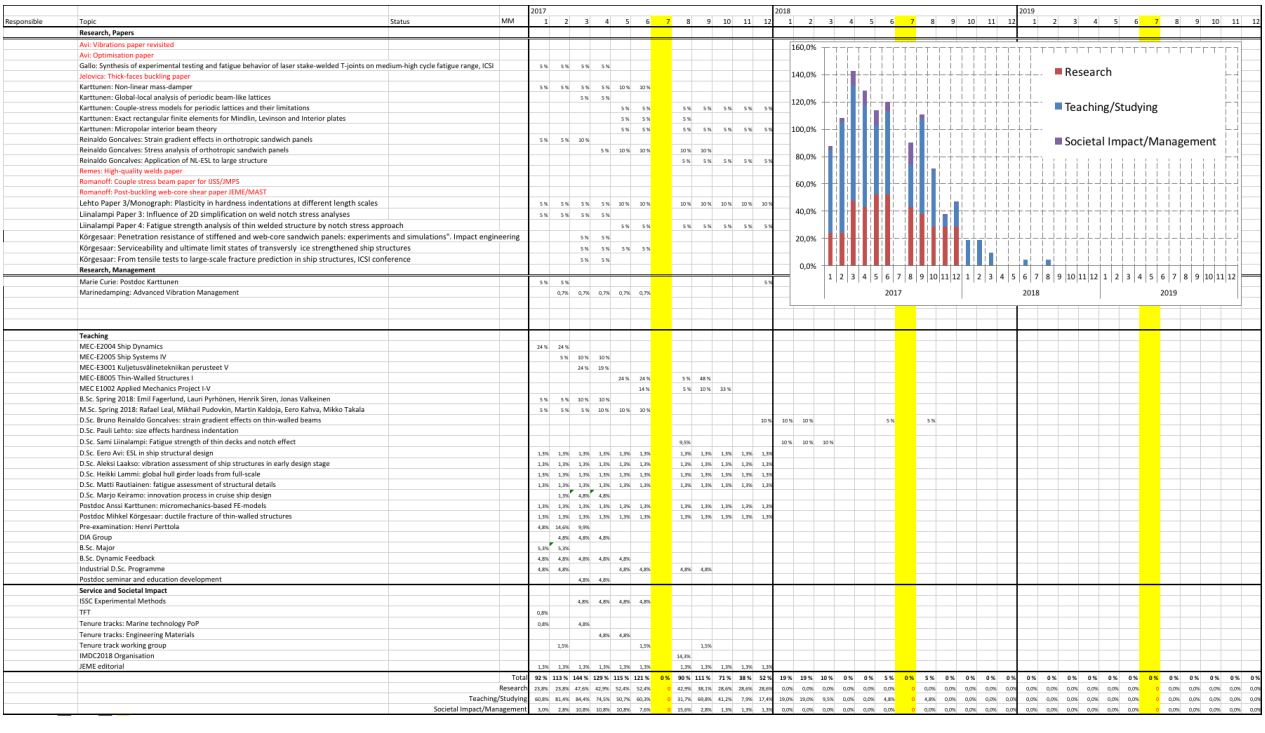
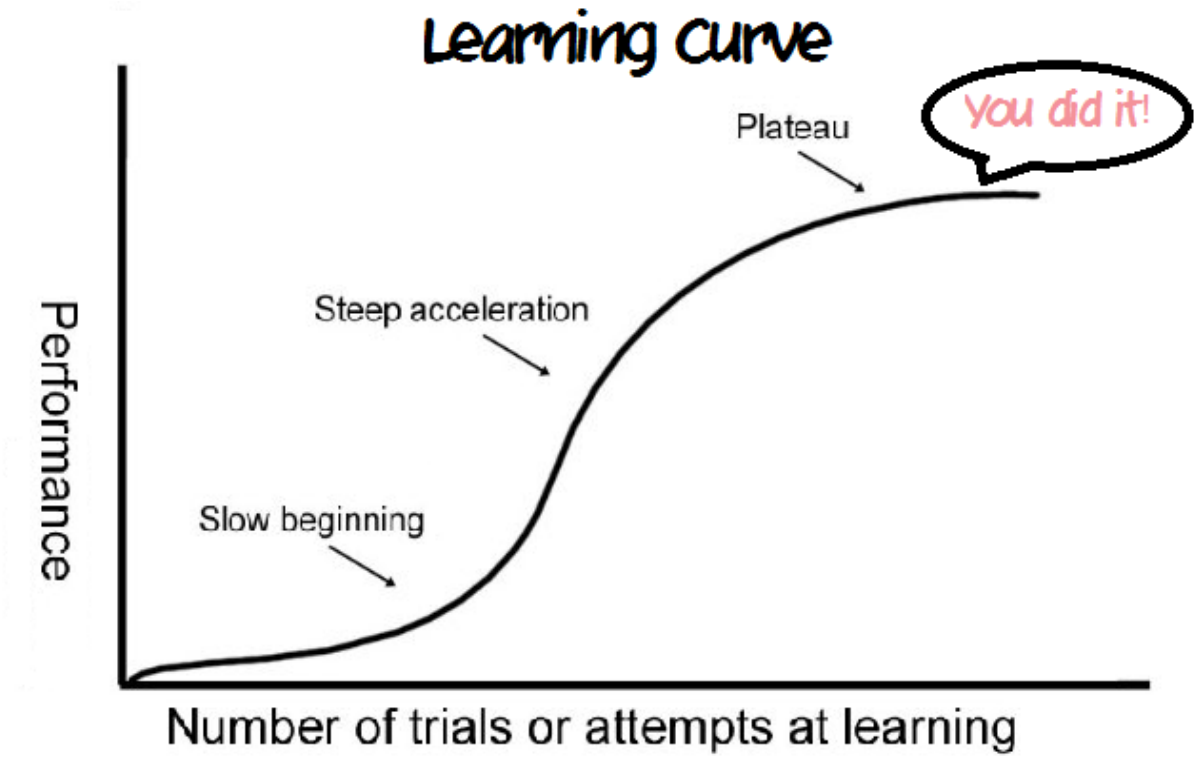
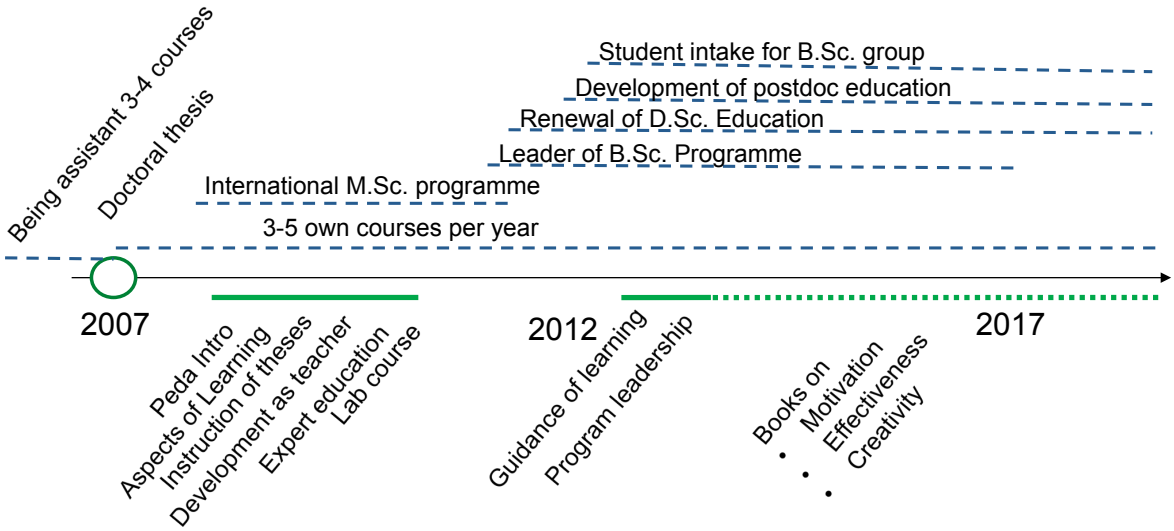
The Annual Plan
240% work load => 120% work load



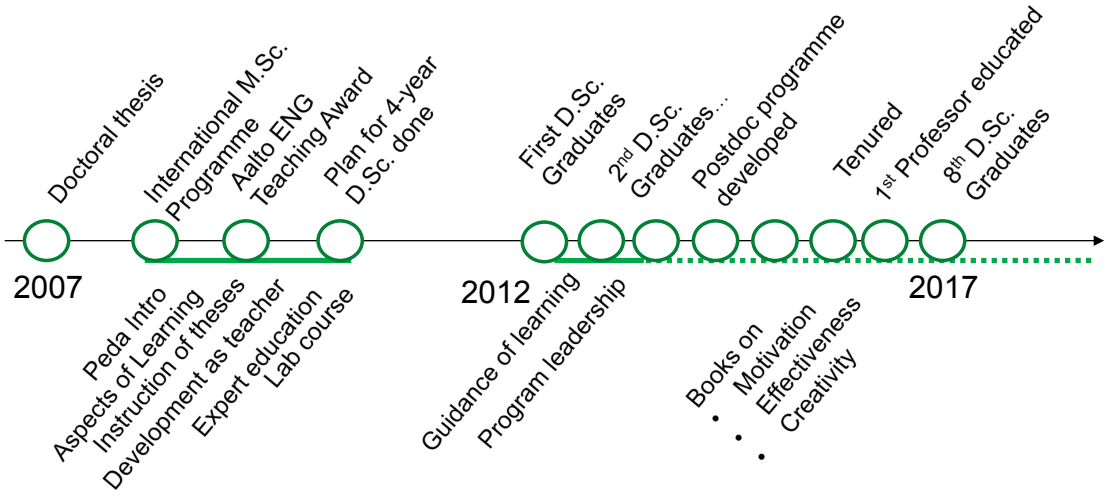


Practice



Theory

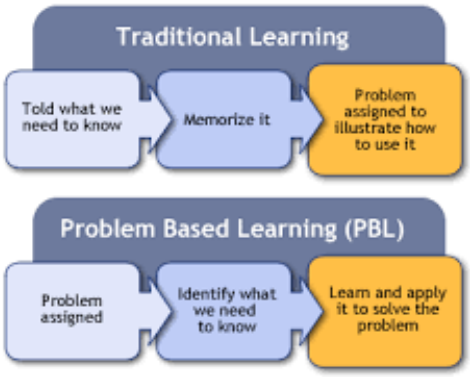
Practice

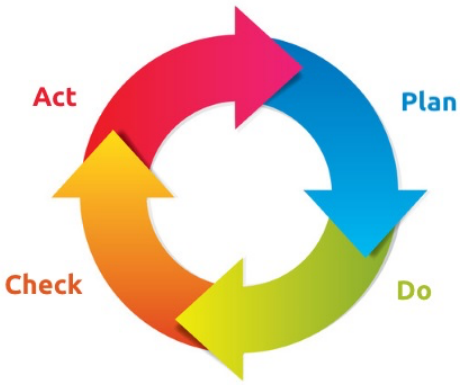


Theory

Problem-based learning

- Develop my own course
- Develop instruction skills
- Develop M.Sc. Programme
- Develop B.Sc. Programme
- Develop D.Sc. Programme
- Develop intake
- Develop career support



Summary

- Criteria exists for advancements in tenure track
- Portfolio is essential tool to fulfill this criteria
- PBL rules
- Co-operation rules