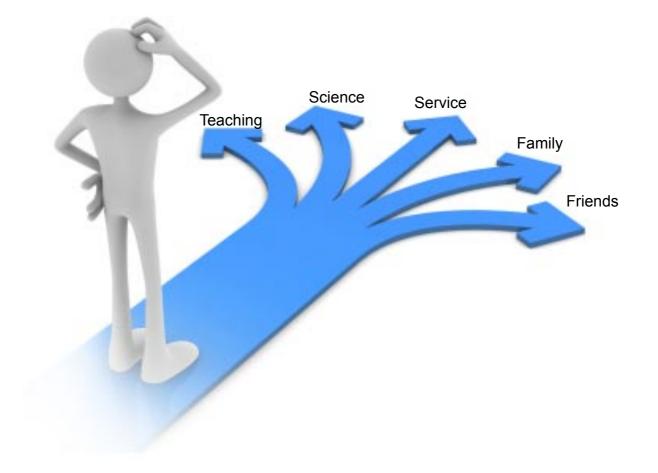
# Aalto University School of Engineering

Learning and Teaching in Higher Education

Development of Teaching Comptetence in Tenure Track





## **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?





### **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, ...)



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### **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 internationallevel 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 internationallevel 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

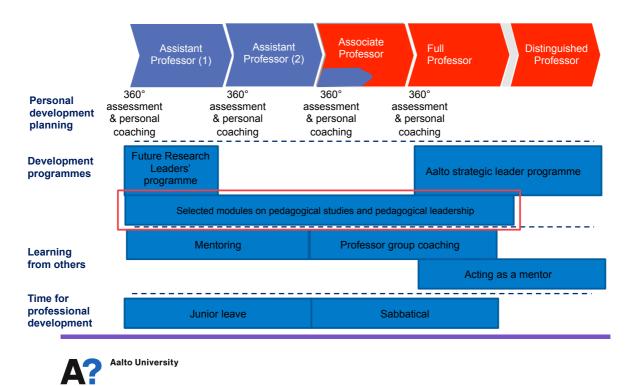
The individual must demonstrate service in one or more of the areas: within the Aalto Community, to the International Scientific Community and/or to Aalto Stakeholders

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





### 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	Assistant	Assistant	Associate	Full	Distinguished
Permanent	Professor (1)	Professor (2)	Professor	Professor	Professor
Research / artistic and professional work	65% +/-10%	60% +/-10%	50% +/-10%	40% +/-15%	Negotiable
2 Teaching	30%	30%	30%	30%	30%
	+/-10%	+/-10%	+/-10%	+/-15%	+/-15%
Activity in Scientific Community and Academic Leadershi	5% <sup>p</sup> +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

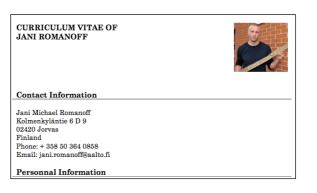


# CV vs. Portfolio

- 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



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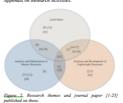


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Research Experience, Vision and Strategy Including Proj Daring my research career, 1 have progressed from research assistant carrying out specified assignments to independent researcher defining research strategies, crating research groups, preparing competitive and non-competitive projects at national and EU levels, managing and working in these projects and communicating the results within the scientific communication working. In these projects and communicating the results within the scientific and the scientific strategies and the scientific strategies and the scientific science of the scientific material strategies and science and the scientific and with design, analysis and optimization of ship artecures; modeling stiffness and strength of steel sandwich structures; and strategies, 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.

RESEARCH



#### ts and Recruitment of Personnel 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 MARTECprojects and for Croatian Science Foundation.



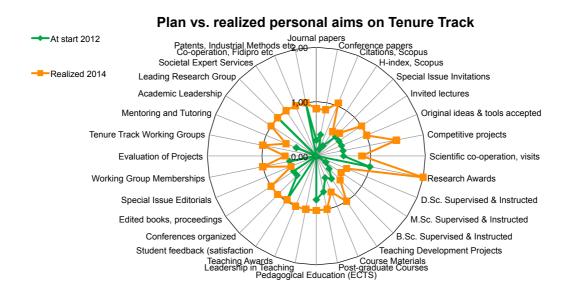
#### Igure 3. Euture Directions of Research.

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 policy, are willing to generate the strength of the second strength of the 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. Timemangement and result-intended finding is important as it on the strength environment where failures are set on the strength environment where the strength of the done through hermanical all should be the Structures Congress (ISSC) committee work. Cooperation with the best is also important. Networking is





## **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

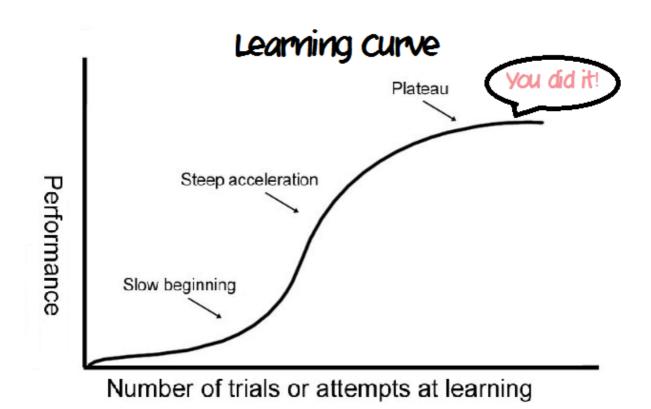
		By Numbe	rs			Scaled by	2015 Goals	
				A	Associate			
		At start	Realized	F	Professor at end	At start		
		2012	2014	c	of 2018	2012	Realized 2014	Comments
	Journal papers	1:		33	38	0,29	0,87	1 own + 1 for each doctoral student
ج	Conference papers	18	3	39	45	0,40	0,87	2 own + 1 for each doctoral student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

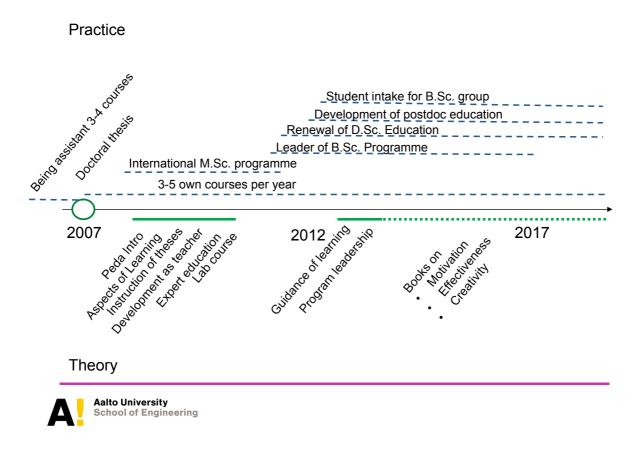


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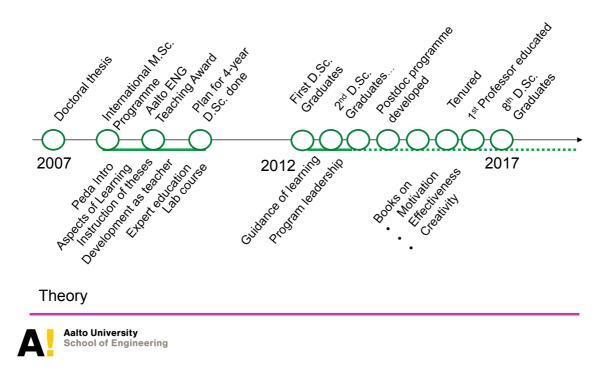
### The Annual Plan 240% work load => 120% work load

			2017	2017				20	18		2019									
Responsible	Topic	Status MM	1	2 3	4	5 6	7 8 9 10 11			3 4 5 6	7 8	9 10	11 12	1 2	3 4	5	6 7	8 9	10	11 1
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	Avi: Vibrations paper revisited		-	_	_	_			(		_		_	-	_	-		-	_	-
	Avi: Vibrations paper revision Avi: Optimisation paper								160,0% -		- T - F T - F	T 7 T T		T 7 - T 7		7-64-	F 7 - F -	1-64-	TT-F	7
	Gallo: Synthesis of experimental testing and fatigue behavior of laser stake-welded T-joints on me	fium hish curlo fatimus canno 1051		5% 5%					-					1.1						
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	Reinaldo Goncalves: Stress analysis of orthotropic sandwich panels				5.%	10 % 30 %	10 % 30 %		80.0% -									-		
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	MEC-E8005 Thin-Walled Structures I					24 % 24 %	5 % 48 %													
	MEC E1002 Applied Mechanics Project I-V					14 N	5% 10N 33%													
	B.Sc. Spring 2018: Emil Fagerlund, Lauri Pyrhönen, Henrik Siren, Jonas Valkeinen		5.%	5 % 30 N	30 N															
	M.Sc. Spring 2018: Rafael Leal, Mikhail Pudovkin, Martin Kaldoja, Eero Kahva, Mikko Takala		5.%	5% 5%	10%	10% 20%														
	D.Sc. Bruno Reinaldo Goncalves: strain gradient effects on thin-walled beams							10 N 1	10 % 10 %	5 N	5 %									
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	D.Sc. Sami Liinalampi: Fatigue strength of thin decks and notch effect						9,5%	1	0% 10% 1	o N										
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	D.Sc. Heikki Lammi; global hull girder loads from full-scale		1.5%			1.3% 1.3%	1.75 1.75 1.75 1.75	1.3%												
	D.Sc. Matti Rautiainen: fatigue assessment of structural details		1,3%			1.2% 1.2%	1,2% 1,2% 1,3% 1,3%	1.25					_							
	D.Sc. Mario Keiramo: innovation process in cruise ship design			1.3% 4.8%		4,410							-							
	Postdoc Anssi Karttunen: micromechanics-based FE-models					1,2% 1,2%	1,8% 1,8% 1,3% 1,8%	1.25												
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L	Tenure tracks: Marine technology PoP		0,8%	4,8%									_							
	Tenure tracks: Engineering Materials				4,8%								_							
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		Teaching/Studving				50.7% 60.2%	0 31.76 69.85 41.25 7.96		20% 22.0% 1	5% 0.0% 0.0% 4.8%	0 4.8%	0.0% 0.0%	0.0% 0.0%	0.0% 0.0%	0.0% 0.0%	6 0.0% 0.0	2% 0	0.0% 0.0%	0.0% 0	0%
		Societal Impact/Management				10.8% 7.6%				0% 0.0% 0.0% 0.0%	0 0.0%	0.0% 0.0%	0.0% 0.0%		0.0% 0.0%			0.0% 0.0%		
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### Practice

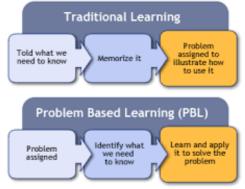


# **Problem-based learning**

- 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

