

# The 2017 Performance Point Model

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Executive Management  
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## Introduction

In this document we revise the Performance Point Model from 2015.

ITU strives to become the primary provider of IT Research and IT Education in Denmark. The university is measured against other Danish universities in terms of volume of education (ECTS points), research publications (BFI points) and externally funded research.

The Performance Point Model identifies what research and teaching activities are part of the model and defines how these are measured. It also defines expectations to *average* performance of employees, depending on the type of position held.

Obviously, there will be variations in individual performance, both over time and between individual employees. Executive Management does not expect anybody to perform above average all the time. This document defines a quality standard concerning when aggregated performance at department/group/center level is so far below expected average that the performance is considered a quality issue.

It is a key feature of the model that it is rather simple and does not e.g. require a cumbersome time registration, and perhaps more importantly the model is an *output model* since it measures the produced teaching (in terms of ECTS points) and research (in terms of BFI points and spending of external funding). The model does not count the hours spent on teaching and research.

The model takes into account institutional services, e.g., being head of a study programme or head of the PhD School. However, some services are considered to be an integral part of being a researcher at ITU, e.g., participating in assessment and hiring committees, being member of boards, participation in projects, participating in interviews with journalists. In this version of the model, it is novel that we allow for major educational developments to be considered part of institutional services.

Below we first present the research activities to be catered for in the model and we benchmark these activities, then we present the list of institutional services carried out by researchers, and finally we provided the actual model and give examples of how sufficient contributions may be carried out. Finally, we explain how the model should be interpreted for groups of researchers. The appendix contains a sanity check as to what extent the model would have been sufficient

for satisfying the teaching load and certain research demands in 2015 (the most recent year where data is available).

## Research Activities

The list of research activities to be part of the model is defined to be:

- Publication of research measured in terms of **BFI points** earned
- Spending of **externally funded research**.
  - The distribution of the annual spending of external funding on research activities must be agreed among those researchers involved in the spending.
  - Supervision of industrial PhD students (and other students not employed at ITU) is considered part of the spending of external funding (although this kind of spending is not part of the national statistics for spending of external research funding).

BFI points are as measured as defined by the Ministry of Education and Research.

The annual spending on externally funded research activities is measured as reported by the ITU financial section; for each activity involving spending of external funding the researchers participating must agree on a distribution of the money spend, say evenly by all the participants.

The supervision of an industrial PhD student (or similar) contributes each year by half of the average salary for a PhD student. The contribution is provided as institutional service points.

Notice that PhD supervision is not explicitly listed as a research activity above, however a supervisor may benefit from writing joint publications with a PhD student and thereby earning BFI points, also a supervisor may benefit from having the student assisting on teaching activities carried out by the supervisor (or someone else in the department to which the supervisor belongs).

## Benchmarking Research Activities

The baseline of the model is the average within the Danish university sector; let us consider what the average is measuring the two kinds of research activities mentioned above.

### Benchmarking BFI Points

The national average for BFI points in 2015 per research FTE was  $(27,977.18/12,127.10 =) 2.31$ . At ITU the average of BFI points in 2015 was  $(202.39/86.52=) 2.34$  per research FTE. A ratio of  $2.31/2.34 = 0.99$ .

ITU earned in 2015 a total of 202.39 BFI points. We expect that *senior*

*researchers* (associate and full professors) earn more BFI points on average than other ITU researchers. From the PP IT system, around 55% of the ITU BFI points are due to senior researchers. Then 111.31 of 202.39 BFI points are supposed to be earned by senior researchers.

In 2015 ITU had 52.53 FTE in the category of senior researchers corresponding to 26.27 research FTE in that category. This gives an average of  $(111.31/26.27=)$  4.24 BFI points per research FTE senior researcher in 2015. Multiplying then by the factor 0.99 from above, in order to reach the national average of the production of BFI points per research FTE, gives that a research FTE senior researcher will be expected to contribute by producing 4.20 BFI points. Equivalently a senior researcher, being half a research FTE, should then produce 2.10 BFI points per year.

We could do a similar benchmarking for all other categories of researchers than senior researchers but what we will do instead is simply to expect that researchers in those categories contribute less than 2.10 BFI points a year. Please confer the examples below of how requirements to junior researchers may be fulfilled.

### **Benchmarking External Funding**

In 2015 the average external funding spent per research FTE at the Danish university sector was  $(7,174,240/12,127.10 =)$  592 KDKK, while ITU spent  $(26,704/86.52=)$  309 KDKK external funding per research FTE, a ratio of  $592/309 = 1.92$ .

The spending of external funding in 2015 at ITU was 26.7 MDKK. We expect that senior researchers spend more external funding than other ITU researchers. According to the PP IT system senior researchers spend in 2015 a bit more than 90% of the ITU spending of external funding. Then 24.03 MDKK of the 26.7 MDKK was spent by senior researchers in 2015.

In 2015 ITU had 52.53 FTE in the category of senior researchers corresponding to 26.27 research FTE in that category. This gives an average spending of  $(24.03 \text{ MDKK}/26.27 =)$  914,732 DKK per research FTE senior researcher in 2015 given the assumption outlined above where senior researchers spend 90% of the external funding. Multiplying then by the factor 1.92 from above in order to reach the national average of the spending of external research funding gives that senior researchers will be expected to contribute by spending 1,756,285 DKK per FTE. Equivalently a senior researcher, being half a research FTE, should then spend  $(878,143 \text{ rounding to})$  878.000 DKK per year.

We leave out supervision of industrial PhD students (or similar students not employed at ITU) in the calculation of the national benchmarking of external funding; but as stated above we allow that such supervision contributes to the ITU annual spending of external funding by 50% of the average annual salary for a PhD student.

Our benchmarking on external funding above is based solely on the expectations to senior researchers, since we do not expect that junior researchers will contribute (significantly) in terms of spending of external funding.

## Institutional service workloads

At the departments we have the following types of institutional service tasks. Here they are listed together with the assumed workload in terms of FTE (i.e. the part of a full time position)

- Head of Studies: 0.5 FTE
- Head of PhD School: 0.25 FTE
- Head of DDK, DIM, SWU: 0.35 FTE
- Head of SDT: 0.30 FTE
- Head of Data Science, DMD, Games, GBI: 0.25 FTE
- Head of ILM: 0.20 FTE
- Head of SEN, IND, DIT: 0.10 FTE
- Education Development: 0.25
- Union representative: 0.25 FTE

## The model

The model defines a *metric* for how to measure researcher's contribution to teaching, research and institutional services. Below we spell out what the metric will be for all researcher categories in terms of a full time equivalent (FTE).

A senior researcher FTE must earn at least 100 *performance points* (PP) a year, an assistant professor FTE must earn at least 55 PP a year, likewise an ITU funded postdoc FTE must earn at least 55 PP a year. An externally funded postdoc FTE not being principal investigator is supposed to earn 15 PP a year. A externally funded postdoc FTE being principal investigator is supposed to earn 30 PP (whereof approximately 15 PP comes from own salary). A PhD student is not supposed to earn PP's.

A research assistant may be doing both research and teaching; we only have requirements on the part of the work being teaching. A research assistant teaching FTE must earn 100 PP a year; e.g., a research assistant FTE spending 50% of the time on teaching must earn 50 PP a year.

Performance points can be obtained doing teaching, research, and institutional services.

For the institutional service part researchers will be given 100 PP a year per FTE the service task in question is supposed to correlate with. For instance, the Head of Studies will be given 50 PP a year.

For teaching 1.0 PP per 15.7 ECTS points earned will be given. This is derived from the 2017 ECTS model where a full time teaching equivalent is supposed to earn  $(1,431 * 1.1 =) 1,574$  ECTS points a year.

For research 25 PP per 2.10 BFI points earned and 25 PP per 878,000 DKK of spending of external funding will be given. Confer the benchmarking of BFI points and external funding above.

Below are a few examples of how PP's can be earned for both senior and junior researchers.

### Associate professor

An associate professor can earn 100 PP per year by teaching 785 ECTS points (in accordance with the ECTS model), earn 2.10 BFI points, and spend at least 878,000 DKK of external funding per year.

### Assistant professor

An assistant professor can earn 55 PP by teaching 628 ECTS points (and thereby earning 40 PP) and by producing 1.26 BFI points earning the remaining 15 PP.

### A postdoc

A postdoc fully funded by ITU can earn 55 PP similarly to an assistant professor. A fully externally funded postdoc can earn 15 PP by producing 1.26 BFI points. A fully funded externally funded postdoc being PI can earn 15 PP by producing 1.26 BFI points and 15 more PP by spending DKK 527.000.

### Research assistants (teaching)

A research assistant spending all the time on teaching can produce 100 PP a year earning 1,570 ECTS points.

## Departments, Groups and Centers

For departments, groups and centers, the model applies as follows.

The *expected gross performance* of the department/research group/center is the sum of the expectations set by the model to the individuals of the group. The *expected net performance* of a group is the expected gross performance with all PP due to institutional services subtracted.

Next, we say that *the expectation* to a group (i.e. a department/research group/center) is that

1. The total number of PP's produced by that group is greater than or equal to the expected gross performance of the group; *and*

2. The total number of PP's produced by the group from teaching; publications and external funding, respectively, is greater than or equal to  $\frac{1}{2}$ ;  $\frac{1}{4}$  and  $\frac{1}{4}$ , respectively, of 80 % of the expected net performance of the group.

Item 2 emphasizes the importance of a balance between teaching and research. In particular, every group is expected to deliver at least 20 % of its expected net performance from external funding; at least 20 % of its expected net performance from publications and at least 40 % of its expected net performance from teaching.

**Example 1:** Suppose a group consisting of three associate professors where one is doing institutional services of 20 PP. The expected gross performance of that group is then 300 PP. The expected net performance of that group is  $(300-20 =)$  280 PP. The expectation to that group is that a) it produces at least 300 PP; and b) that it produces at least  $(280*0.8*0.5 =)$  112 PP from teaching, at least  $(280*0.8*0.25 =)$  56 PP from publications, and at least 56 PP from spending external funding.

Next, we define a *quality standard* for performance for teaching and research performance:

**Quality Standard** For every group,

1. The total number of PP's produced by the group is greater than or equal to the expected gross performance of the group; *and*
2. The total number of PP's produced by the group from teaching; publications and external funding, respectively, is greater than or equal to  $\frac{1}{2}$ ;  $\frac{1}{4}$  and  $\frac{1}{4}$ , respectively, of 50 % of the expected net performance of the group.

**Example 2:** Suppose a group consisting of three associate professors where one is doing institutional services of 20 PP. The expected gross performance of that group is then 300 PP. The expected net performance of that group is  $(300-20 =)$  280 PP. The quality standard for that group is that a) it produces at least 300 PP; and b) that it produces at least  $(280*0.5*0.5 =)$  70 PP from teaching, at least  $(280*0.5*0.25 =)$  35 PP from publications, and at least 35 PP from spending external funding.

As with all quality standards, every breach of a quality standard must be eliminated. It is the responsibility of the head of the group to make that happen. Note that a group is in breach of the Quality Standard if

1. The total number of PP's produced by the group is less than the expected gross performance of the group; *or*
2. The total number of PP's produced by the group from teaching; publications or external funding, respectively, is less than  $\frac{1}{2}$ ;  $\frac{1}{4}$  and  $\frac{1}{4}$ , respectively, of 50 % of the expected net performance of the group.

The head of the group has the flexibility, with due respect to ITU policies, strategies and agreements, to distribute tasks among members of the group, as long as the group meets the expectations defined above.

The expected performance of a department is part of the yearly performance contracts between Executive Management and the Head of that department.

## **Revision**

This document should be revised every second year.

## Appendix 1

In this appendix we carry out a sanity check of the PP Model, the purpose is to answer the question as to whether we with that model (in principle) would have been able to fulfil teaching carried out while also fulfilling research goals in 2015.

The sanity check is based on the figures below from the year 2015 based on the FTE accounting for that year.

<b>Category</b>	<b>FTE</b>	<b>Teaching FTE</b>	<b>Research FTE</b>	<b>PP</b>
Part-time lecturer	14.45	14.45	0	1,445
PhD	34.97	0	34.97	0
Research assistant (research)	4.75	0	4.75	0
Research assistant (teaching)	5.00	5.00	0	500
Postdoc (externally funded)	11.00	2.20	8.80	165
Postdoc (funded by ITU)	5.89	2.36	3.53	324
Assistant Professor	19.81	7.92	11.89	1,090
Associate Professor	46.16	23.08	23.08	4,616
Full Professor	6.48	3.24	3.24	637
In total	148.51	58.25	90.26	8,777

According to the 2015 annual report in total 1,271 STÅ and 105 'årselever' were produced. This corresponds to a production of  $((1,271+105)*60 =) 82,560$  ECTS points which corresponds to  $(82,560/15.74 =) 5,245$  PP.

According to the development contract for 2015-17 we should in 2015 have produced 1.85 BFI points per research FTE, that corresponds to a production of  $(25*1.85*90.26/2.10 =) 1,988$  PP.

According to the development contract for 2015-17 we should in 2015 spend 650 KDKK per senior VIP (assistant and full professor) FTE from externally funded research grants. That corresponds to  $(25 * (46.16+6.48) * 650,000 \text{ DKK}/878,000 \text{ DKK} =) 974$  PP.

The institutional services give rise to 535 PP (according to the 2017 ECTS model).

In total there was in 2015 a need for a production of  $(5,245 + 1,988 + 974 + 535 =)$  8,742 PP. A total of 8,777 PP was supposed to be produced.

In conclusion, given the above numbers for 2015, the sanity check tells that our model in 2015 would be sufficient for faculty to satisfy the goals concerning BFI points and external funding in the development contract while carrying out the teaching produced that year.