

Research Assessment Exercise 2014

Panel 06 – Engineering **Specific Criteria and Working Methods**

(February 2014)

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Introduction

1. Panels of the Research Assessment Exercise (RAE) 2014 have formulated panel-specific guidelines to provide advice on the criteria and working methods in assessing submissions to the RAE 2014. This document sets out the specific criteria and working methods that the Engineering Panel will apply. It should be read alongside the General Panel Guidelines. In areas where the panel-specific criteria do not provide further information, this is because the provisions in the General Panel Guidelines prevail and apply to the Panel without further elaboration or amplification.

2. The panel-specific guidelines may also assist institutions and staff members with the process of arranging submissions for assessment. These guidelines do not replace or supersede the requirements for submissions that are set out in the Guidance Notes for the RAE 2014.

3. The RAE 2014 is an expert review exercise. Panel members will exercise their knowledge, judgement and expertise to reach a collective view on the quality profile of research.

Section A: Submissions

Cost Centres under the Panel

4. The Engineering Panel acknowledges the mapping of cost centres in Appendix B of the General Panel Guidelines, also in Appendix F of the Guidance Notes. The Panel covers the following cost centres:

- 16 mechanical engineering
- 19 chemical engineering
- 20 production engineering (incl. manufacturing & industrial engineering)
- 21 marine engineering
- 23 materials technology
- 24 textile technology
- 26 other technologies (incl. environmental engineering & nautical studies)
- 65 biomedical engineering

Weighting the Elements of the Assessment

5. The Panel will attach the default weighting to the three elements of the assessment as follows when determining the overall quality profile for each cost centre:

- Research outputs : 80%
- External competitive peer-reviewed research grants : 10%
- Esteem measures : 10%

Research Strategy Statements

6. Following paragraphs 2.15, 2.16 and 3.2 of the Guidance Notes and paragraph 15 of the General Panel Guidelines, Research Strategy Statements submitted by each institution and individual cost centres of each institution will provide contextual information for the Panel when assessing the submissions.

7. The Panel would expect the Research Strategy Statements to include background information on institution's existing research strategy, focus area and distribution of research activities across research areas.

Output Types

8. The Engineering Panel will consider the eligibility of research outputs as described in paragraph 18 of the General Panel Guidelines and paragraphs 5.8 to 5.12 of the Guidance Notes.

9. The Panel will assess the quality of each eligible item on its own merits and not in terms of its publication category, medium or language of publication. The Panel will study each item in detail and will not assess outputs mechanistically according to the medium of publication. The Panel recognises that there can be work of the highest quality in various output forms, and no distinction will be made between types of output submitted nor whether the output has been made available electronically or in a physical form.

10. Forms of research outputs that are admissible and specifically relevant to the Engineering Panel include the following examples. This should not be regarded as an exhaustive list. Equally, there is no implication of priority or importance in the ordering of examples in this list:

- books, book chapters and research monographs
- published conference papers and reports
- new materials, devices, products and processes
- patents awarded
- published papers in peer-reviewed journals
- software, computer code and algorithms
- standards documents
- portfolio of design work, creative arts
- technical reports

11. Research outputs will be assessed for the quality of original research they include. The Panel will accept the submission of review articles only where they contain a significant component of unpublished research or new insight. Such outputs will be judged only on their original research or novelty of insight.

Co-authored/Co-produced Outputs

12. The Panel confirms the principles on assessing co-authored/co-produced research outputs as set out in paragraphs 31 to 33 of the General Panel Guidelines.

Double-weighted Outputs

13. Paragraphs 29 and 30 of the General Panel Guidelines and paragraphs 5.13 to 5.14 of the Guidance Notes indicate that in exceptional cases an academic may request that outputs of extended scale and scope be double-weighted in the assessment. However, given the publication patterns in its cost centres, this Panel does not expect to receive any items proposed for double-weighting.

Section B: Assessment Criteria: Research Outputs

Criteria and Quality Levels

14. Panel members will use their professional judgement with reference to international standards in assessing research outputs.

15. In assessing outputs, the Panel will look for evidence of originality, significance and rigour, and will grade each item into one of the five categories of quality level as set out in paragraph 19 of the General Panel Guidelines. The Panel will use the generic description of the quality levels as set out in paragraph 20 of the General Panel Guidelines.

Additional Information on Outputs

16. Other than the data as specified in the Guidance Notes, and unless specifically required by the Panel, no other information should be provided, and the Panel will take no account of any such information if submitted.

Metrics

17. This Panel does not expect to refer to metrics in reaching its judgements on the quality of submitted research outputs.

Section C: Assessment Criteria: External Competitive Peer-reviewed Research Grants

18. This Panel will review the completed proforma on external competitive peer-reviewed grants and the listing of the competitive peer-reviewed grants as described in paragraphs 7.2 to 7.4 of the Guidance Notes.

19. Pursuant to paragraphs 45 to 47 of the General Panel Guidelines, factors relevant to the Panel's evaluation of the submitted data are as follows:

- a. The value of research grant per staff member as an important indicator.
- b. That grants from UGC/RGC or Other Government funding or Hong Kong based non-government sources or Outside Hong Kong will be given particular consideration within the assessment.
- c. The overall balance of funding sources.
- d. The trajectory of funding (relative growth or decline through the period) as an important demonstration of vitality.
- e. The total number of grants as well as the total value of grants.
- f. That some areas of research within its remit are less resource-intensive than others.

Section D: Assessment Criteria: Esteem Measures

20. This Panel will assess esteem measures according to paragraphs 7.5 and 7.6 of the Guidance Notes. Esteem measures should be recognition conferred by an external body. They may include, but are not limited to, editorship of academic journals, research-based awards, honours or prizes, significant grants or donations for research, which are not competitive or peer-reviewed (e.g. industry research grants), government consultancy awarded through tender process.

21. Indicators of esteem that are of particular relevance to the Engineering Panel include, but are not limited to, the following in no particular order:

- Invited Keynote lectures
- Academy Fellowships

22. The Panel would particularly welcome the following research group or cost centre level esteem indicators:

- Exemplars of collaborations with creative industries or arts, design and/or media organisations or other end-users of research, including in particular long-standing partnerships and knowledge transfer
- Exemplars of commercialisation in terms of patents awarded, creation of spin-outs or other forms of wealth creation

- Exemplars of the impact of research activity on organisations, policies, practices and the quality of life.

The list is not intended to be exhaustive.

23. This Panel will make an overall judgement about the indicators of esteem relating to individual academics and groups according to paragraphs 48 to 50 of the General Panel Guidelines.

Section E : Working Methods

Allocation of work

24. The Convenor, consulting the Deputy Convenor and other panel members as appropriate, will allocate work to members and if necessary external reviewers in light of their expertise and workload, taking into account any potential conflicts of interest. All panel members will take account of the requirements of the General Panel Guidelines to ensure that the exercise is conducted fairly and transparently.

Use of Sub-Groups

25. This Panel will establish sub-groups to assess outputs. Through a calibration exercise and cross sub-group working, the panel will ensure that the yardstick for assessment is consistent between sub-groups.

Assessment Process

26. Panel members will examine the submitted outputs in detail, and put forward a recommendation to the panel or sub-group (if a panel decides to have sub-groups for assessment) for a collective decision on the final grading. To ensure fairness and consistency, each research output will be assessed in detail by at least two members, one of whom should be a non-local member to the extent possible. Similarly, for those cost centres which are only housed at one or two local institutions, submissions should be assigned to at least one non-local member in order to ensure fair and impartial assessment. Specifically for the Engineering Panel, each research output will be assessed in detail by at least two, but ideally three members, at least one of whom will be a non-local member.

27. Subject to conflicts of interest, the assessment of external peer-reviewed research grant and esteem measures will be undertaken by each member of the Panel and grading will be a collective decision of the Panel.

External Reviewers

28. This Panel will follow the procedure in paragraph 42 of the General Panel Guidelines when referral to external reviewers becomes necessary for panel assessment.

Cross Referral

29. This Panel will follow the process described in paragraphs 37 to 41 of the General Panel Guidelines when initiating and assessing cross-referrals by another panel or by cost centre(s) within the Panel.

30. Generally, research on pedagogy and education issues submitted to this Panel will be assessed by panel members or external reviewers with expertise in pedagogy. Exceptionally, such work may be cross-referred to Panel 13, Education.

Trial Assessment

31. Following paragraphs 67 and 68 of the General Panel Guidelines, the Panel will consider about 2% of the outputs submitted to the Panel for trial assessment. The sample submissions will be trial assessed by all members of the Panel. The trial assessment will also cover the general principles for evaluating external competitive peer-reviewed research grants and esteem measures.