
1/2015 ACADEMIC RESEARCH FUND (AcRF) TIER 2 GRANT CALL

August 2014

General Information

The MOE Academic Research Fund (AcRF) Tier 2 funds research projects on a competitive basis across Singapore-based universities. Each grant proposal submitted should have a total project value (TPV) (excluding research scholarships¹) of between S\$500,000 and S\$1 million over a three-year duration. Only Pure Mathematics and Statistics projects under the Informatics and Mathematics discipline cluster with TPV of S\$250,000 and above are also eligible for funding under AcRF Tier 2. Projects under the Accountancy, Business, Humanities and Social Sciences discipline cluster with TPV of S\$100,000² and above are also eligible for funding under AcRF Tier 2. Two grant calls are planned for each year, in February and August.

The AcRF supports research in Singapore-based universities that has academic significance and a good potential for creating new knowledge that will benefit the larger academic community. The research outcomes should also advance high-quality research of international excellence that challenges current understanding or provides pathways to new frontiers. It also supports research that as a foundation for discoveries that have or will have direct impact on the economy and society. AcRF communicates MOE's mission of training of postgraduate research (PGR) manpower to support the national R&D activities by funding PGR scholarships. Hence, PGR training is regarded to be superior over other manpower requests in AcRF Tier 2 funding. While MOE encourages PGR scholars to gain as much exposure in research as possible, MOE does not allow any students to be hired as paid student assistant (i.e. graduate student researcher) using other forms of AcRF funding.

AcRF Tier 2 evolves from and replaces the previous Academic Research Fund (ARF) submitted for approval by MOE's Academic Research Fund Committee.

Principal Investigator (PI) and Co-investigators (co-PIs) must be full-time faculty³ based locally in our AUs (including autonomous institutions within the AUs, e.g. Duke-NUS Graduate Medical School). Collaborators can be based overseas but the research funded under AcRF Tier 2 has to be conducted in Singapore.

Review Process

The proposal will be reviewed and evaluated by an Expert Panel and the Academic Research Council (ARC).

Application

The applicant should submit the full proposal via MOE's Online Grant Administration (OLGA) System. Submitted proposals have to be verified by the university's Office of Research (ORE) and endorsed by the Director of Research (DOR) before it can be considered for evaluation.

¹ Applicants only need to indicate the number of research scholars to be trained on the project and the budget for the AcRF Tier 2 research scholars will be computed separately by MOE after the proposal has been approved for funding.

² With effect from the August 2012 Grant Call.

³ Full-time faculty members are those who hold appointment and perform duties at the AU for a minimum of 9 months a year.

Each ORE will also need to print out a copy of all the endorsed proposals from OLGA and submit them to the Ministry of Education by **19 September 2014**. Hardcopy proposals need to be submitted to:

Ms Lee May Gee
Deputy Director, Higher Education
Ministry of Education,
1 North Buona Vista Drive
Singapore 138675

Closing Date

All proposals submitted to MOE's OLGA system must be verified and endorsed by **12 September 2014 (12 noon)**.

For Applicant's Compliance

1. **The proposal shall be self-contained.** All supporting documents (e.g. quotations, patent claim or any licensing agreement) should be appended.
2. Word limits and Upload File sizes stipulated in the online application form must be strictly adhered to. All documents should only be submitted in **pdf. format**.
3. Submission of reviews of the proposal is not required as it will be reviewed and evaluated by MOE's Expert Panel and Academic Research (ARC) Council.

Section 4: Curriculum Vitae

4. The CV of PI, co-PIs and collaborators must include references and selected publications which are relevant to the application. They should also state the number of staff (eg. post-doctorates, research assistants, etc.) and PhD students currently in their lab. PI is to indicate their source and duration/period of funding.

Section 5: Classification of Discipline Cluster

5. The applicant should submit his/her proposal to an appropriate discipline cluster. Proposals submitted to the wrong discipline cluster will be disqualified without evaluation by the EPs. OREs should advise PI to make necessary changes accordingly. Please refer to **Annex A** for detailed classification of research disciplines.
6. If the scope of a proposal falls beyond a single discipline cluster, PI should highlight to OREs that it is an interdisciplinary proposal and indicate a primary EP and a secondary EP for evaluation. The PI will submit the proposal to the primary EP in the OLGA system. OREs will submit the list of interdisciplinary proposals to MOE at the close of the grant call.
7. If the applicant has submitted a similar proposal to AcRF Tier 2, the applicant **MUST** indicate the month and year of submission and **justify** how the current proposal differs significantly from the previous one. Please note that proposals rejected in previous grant calls are generally not allowed to be resubmitted.

For Resubmission of Proposals

8. With effect from the August 2006 grant call, an applicant whose proposal is allowed for resubmission may resubmit his/her proposal in the next grant call for reconsideration. The applicant must address the comments and concerns raised by MOE's expert panel. The applicant must quote the official grant application number in **Section 1** and also attach a one-page point-by-point rebuttal to address every one of the EP's earlier comments/concerns in **Section 5**. **A proposal that is resubmitted will compete on an equal basis with other proposals submitted in the same grant call.**

Section 6: Abstract of the Proposal

9. The applicant must ensure the abstract of the proposal captures the academic significance of the research, the hypotheses or research questions to be addressed, the approach and feasibility of the study.

Section 7: Details of Research Proposal

10. Applicants should adhere to the guidelines listed in **Annex B** for the preparation of research proposals. New faculty and young investigators should seek guidance from their universities' Offices of Research where necessary.

Section 10: Declaration of Other Funding Support

11. The PI and co-PIs **MUST** declare all previous and existing grants held, as well as grants that have been submitted to other funding agencies at the point of application. PI and co-PIs must declare any overlap in the aims of those projects with that of the current AcRF Tier 2 grant application⁴. They must also state the percentage of time they are involved in each on-going grant.
12. PI and co-PIs should note that parallel submissions are not allowed – i.e. applicants **MUST** never send similar versions or part(s) of the current AcRF Tier 2 proposal application to other agencies for funding (or vice versa).

Section 11: Research Outcomes from Previous Significant Grant Awards (over the past 3 years)

13. Applicants must provide a narrative (no more than 500 words) of the research achievements of the research projects of the PI and co-PIs over the past 3 years that had a total project value of \geq S\$500,000 each. This includes projects funded by MOE and other agencies that have concluded over the past 3 years. The narrative should articulate how the project has created new knowledge of academic significance and how it has impacted or benefited the larger academic community.
14. For Pure Mathematics and Statistics projects, applicants must provide a narrative (no more than 500 words) of the research achievements of the research projects of the PI and co-PIs over the past 3 years that had a total project value of \geq S\$250,000.
15. For Accountancy, Business, Humanities and Social Sciences projects, applicants must provide a narrative (no more than 500 words) of the research achievements of the research projects of the PI and co-PIs over the past 3 years that had a total project value of \geq S\$100,000.

Section 12: Proposed Budget and Justification

16. The budget for the research proposal should be prepared according to the guidelines stipulated by the university's ORE, a copy of which should be made available to the applicant. These guidelines should not deviate from the University's human resource (HR) policies and financial guidelines. A list of fundable and non-fundable items is appended in **Annex C** for reference. The listing in Annex C is non-exhaustive and MOE reserves the right to make changes to the list. MOE reserves the right to readjust the budget after the project is approved for funding.
17. All budgetary items should be clearly explained for their purpose. For instance, the justification should include a description of how the manpower requested would be deployed, how each contributes towards the success of the project, proposed equipment must be supported by relevant quotation, breakdown to be provided in individual line items

⁴ PI and co-PIs must declare any overlap (if any) under Part (b) of the Section 10 and they have to justify the reason for such overlap.

for all Materials and Consumables required for the project, instead of one lump sum under Materials and Consumables, etc. **Budgetary items which lack proper justification will not be funded.**

Grant Renewal

Application for grant renewal has to be accompanied by a final project report of the previous grant. The final report should highlight the milestones and research deliverables achieved. A copy of each publication arising from the research, and a copy of the abstract of each conference attended, and a copy of the thesis titles and abstract of each PGR student trained has to be appended to the report.

Supplementary information for the preparation of grant proposal

ANNEX A	MOE AcRF Tier 2 Discipline Clusters
ANNEX B	Information required for preparing Details of Research Proposal (Section 8)
ANNEX C	Guidelines for fundable/non-fundable items

Annex A**Section 1: MOE AcRF Tier 2 Discipline Clusters**

The PI should select a discipline cluster that best categorizes his/her research proposal so that it may be evaluated by a suitable Expert Panel.

Discipline Cluster	Sub-areas
Chemistry and Chemical Engineering (EP1)	Physical chemistry; Inorganic chemistry; Organic chemistry; Analytical chemistry; Macromolecular chemistry; Theoretical & computational chemistry; Other chemical sciences; Geochemistry; Chemical engineering;
Informatics and Mathematics (EP2)	Mathematics; Statistics; Other mathematical sciences; Information systems; Artificial intelligence & signal & image processing; Computer Engineering (Software); Computer software; Computation theory & mathematics; Data format; Other information, computing & communication sciences.
Biomedical Engineering and Life Sciences (EP3)	Biochemistry and cell biology; Genetics; Microbiology; Botany; Zoology; Physiology; Ecology & evolution; Biotechnology; Other biological sciences; Medicine (General, Immunology, Medical biochemistry & clinical chemistry); Medical microbiology; Pharmacology & pharmaceutical sciences; Medical physiology; Dentistry; Optometry; Clinical sciences; Nursing; Public health & health services; Complementary/alternative medicine; Human movement & sports science; Other medical & health sciences.
Accountancy, Business, Humanities and Social Sciences (EP4)	Political science; Policy & administration; Other policy & political science; Sociology; Social work; Anthropology; Human geography; Demography; History & philosophy of science & medicine; Other studies in human society; Law; Professional development of law practitioners; Justice & legal studies; Law enforcement; Other law, justice & law enforcement; Journalism communication and media; Economic theory; Applied economics; Economic history & history of economic thought; Econometrics; Other economics; Accounting, auditing & accountability; Business & management; Banking, finance & investment; Transportation; Tourism; Services; Other commerce, management, tourism & services; Librarianship; Curatorial studies; Other journalism, librarianship & curatorial studies; Language studies; Literature studies; Cultural studies; Other language & culture; Historical studies; Archaeology & Prehistory; Other history & archaeology; Philosophy; Religion & Religious traditions; Other Philosophy & religion; Performing arts; Visual arts & crafts; Cinema, electronic arts & multimedia; Design studies; Other arts; Education studies; Curriculum studies; Professional development of teachers; Other education; Neurosciences; Psychology; Linguistics; Cognitive science; Other behavioural & cognitive sciences; Architecture and urban environment; Building; Other architecture, urban environment and building.
Physics and Engineering (EP5)	Astronomical sciences; Theoretical & condensed matter physics; Atomic & molecular physics; Nuclear & particle physics; Plasma physics; Optical physics; Classical physics; Other physical sciences; Geology; Geophysics; Oceanography; Hydrology; Atmospheric sciences; Other earth sciences; Aerospace engineering; Manufacturing engineering; Automotive engineering; Mechanical & industrial engineering; Resources engineering; Civil engineering; Electrical & electronic engineering; Geomatic engineering; Environmental engineering; Maritime engineering; Metallurgy; Materials engineering; Computer Engineering (Hardware); Computer hardware; Communications technologies; Interdisciplinary engineering; Other engineering & technology.

Annex B**Section 8: DETAILS OF RESEARCH PROPOSAL**

The description of the proposed research should be in no more than **4 Megabytes**. It **SHOULD** include specific aim(s) of the project, significance, approach, innovation, investigator, environment and preliminary studies/progress reports related to the research proposal. Please emphasise the novelty and innovative aspects of the proposed work and include references cited at the end of the document. Information provided should be sufficiently self-contained for an assessment of the proposal without further reference to other materials. In addition, a useful guide for the writing of proposals is **Heilmeier's Catechism** by George H. Heilmeier, President and CEO of Bellcore, that anyone proposing a research project should be able to answer the following:

- What are you trying to do? Articulate your objectives using absolutely no jargon.
- How is it done today, and what are the limits of current practice?
- What's new in your approach and why do you think it will be successful?
- Who cares? If you're successful, what difference will it make?
- What are the risks and the payoffs?
- How much will it cost? How long will it take?
- What are the mid-term and final "exams" to check for success?

a) Specific Aims

- *State concisely and realistically what the research described in this application is intended to accomplish, the hypotheses to be tested, and research questions to be addressed.*
- *Discuss how the aims of the project are original and innovative.*

b) Significance

- *Briefly describe how this project addresses an important problem of academic significance. State concisely how the success of the project will lead to the creation of new knowledge.*
- *State concisely how the outcomes of the project or its concepts and methodology will drive future research in this field. Relevant references should be appended.*

c) Approach

- *Discuss how the specific aims of the project would be achieved.*
- *Discuss in detail the conceptual framework, design, methods and analyses and describe how they are integrated and appropriate to the aims of the project.*
- *Highlight potential difficulties, limitations and problem areas in the proposed procedure, and propose alternative tactics.*
- *Describe how the project will employ novel concepts, approaches or methods.*
- *State concisely how the project challenges existing models, and describe its advantage over existing methodologies or technologies.*

d) Investigator

- *Discuss the role and contribution of each investigator and collaborator in the project.*
- *Visiting Professors should be identified and their specific role and contribution to the project clearly defined.*

e) Environment

- *Discuss how the environment in which the proposed work will be done can contribute to the probability of its success.*
- *Discuss how the proposed experiments take advantage of unique features of the research environment or leverage on the strengths of collaborative arrangements.*
- *Include evidence of organisational support for the project.*

f) Preliminary Studies/Progress Reports

- *For NEW APPLICATIONS*
 - *Provide an account of the Principal Investigator's preliminary studies (if any) pertinent to the applications and/or any other information that will help to establish the experience and competence of the investigator pursuing the proposed project.*
- *For RENEWAL APPLICATIONS*
 - *Give the beginning and end dates of the period covered since the research project was last reviewed.*
 - *Provide a succinct account of published and unpublished results, indicating the importance of the findings.*
 - *Discuss how the proposed project is related to the previous project and what new knowledge will be created.*
 - *List the titles and complete references to all publications and completed manuscripts that have resulted from the project.*

g) References

- *Please list in chronological order the titles and complete references to recent representative publications pertinent to this research proposal and the applicants' publications and patents held related to this research proposal.*
- *Highlight scientific award(s), if any, of the applicant(s).*

Annex C**Guidelines for Fundable/ Non-Fundable Items**

Type of Expenses	Description
EOM Related Expenses	
Salaries, CPF contributions and fringe benefits including medical, dental, contribution to welfare fund, etc.	<p>Allowed as part of overall compensation to employees provided such costs are incurred under formal established and consistently applied policies of the host university.</p> <p>The salaries offered to staff should be reasonable, in line with local market benchmarks and comply with formal established pay scale of the host institution that is consistently applied regardless of the source of funds.</p>
Bonus / Incentive payments	Allowed as part of a total compensation package, provided such payments are reasonable and comply with formal established policy of the host university that is consistently applied regardless of the source of funds.
Overtime	Not allowed.
Annual leave	Allowed for full-time employees. The number of days of leave accorded to staff must be in accordance with formal policies of the host university that is consistently applied regardless of the source of funds.
Staff recruitment and related cost	Not allowed. Examples of such costs include advertisement and recruitment agency cost, staff relocation, settling-in allowances, etc.
PI's & co-investigators' salary and related expenses	Not allowed.
Visiting Professors	Not allowed unless specifically provided for in the grant proposal and approved by MOE. The Visiting Professor must be identified and his/her contribution to the project must be clearly defined and described in the proposal. OREs should verify that the remuneration rates comply with the institution's standard rates. The budget to be supported will be decided based on the above considerations.
Staff insurance	Not allowed.

OOE Related Expenses	
Audit fees	Not allowed. This includes both internal and external audit fees.
Bank charges	Allowed as long as it is specifically related to the payments for consumables and equipment used in the project.
Books and specialised journals relevant to the research	Books or lab manuals are allowed only if these are directly related to the project. Specialised journals are allowed only if these are directly related to the project and are NOT available in the university's libraries. The funding for journal subscription would be restricted to the duration of the project.
Customs and import duties	Allowed as long as it is specifically related to importation of consumables and equipment used in the project.
Entertainment & refreshment	Not allowed.
Fines and penalties	Not allowed.
Goods and Services Tax (GST)	Allowed for expenses incurred for the project.
Insurance premiums	Not allowed. The host university is responsible for the insurance of the equipment, relevant workmen compensation and professional indemnity insurance which are in line with the host university's risk policies.
Legal fees	Not allowed.
Local & overseas conferences	Allowed, if conference is directly relevant to the research area or necessary to accomplish the project objectives for PI, co-PIs, collaborators, researchers and research students funded under the project grant. However, this is not allowed for overseas collaborators and visiting faculty. If the conferences are conducted overseas, the travel policy of the host university must be consistently adhered to. The PI must submit a copy of the abstract of the conference when claiming reimbursement for such expenses and append to their annual/ final report to MOE.
Overhead expenses - rental, utilities, telephone charges, facilities management, etc	Not allowed.
Patent application, IP related and commercialization expenses	Not allowed. This includes patent application filing, maintenance and other related cost. Such cost should be paid by the host institution.

Professional fees (including fees to consultants)	Not allowed.
Publications	Page charges for publication of manuscript in professional journals are allowed. The costs of reprints and publishing in other media, such as books, monographs and pamphlets are not allowed unless specific approval has been obtained from MOE.
Purchase of lab supplies, consumables, animals, use of services or lab spaces within the host institution's central facilities	The cost for the use of the services and central facilities owned by the host institution such as animal holding units, central laboratory services are allowed and must be based on host institution's fee structures which are consistently applied regardless of source of funds. Host institution may be requested to certify that the fee structure is applied consistently.
Lab safety training and related expenses	Allowed, provided PI has checked with the Office of Safety to ensure that such training is not covered by his/her own institution. PI should also justify for the training's budget.
Repairs and maintenance of research equipment	Allowed, if specifically budgeted for the project and the equipment is used extensively for the research project. The period of maintenance funded from the research grant should be restricted to the duration of the project. For new equipment, maintenance should not be budgeted for the duration the equipment is under warranty (e.g. Year 1) and quotations for maintenance contract must be included.
Staff retreat	Not allowed.
Stationery, Photocopying charges & printer consumables	Allowed.
Transportation, postage & courier services	Allowed. This includes postage, courier and freight charges for bringing in equipment and specialised research consumables and reimbursement for staff transportation.
Volunteers and research patients	Allowed for payment to volunteers and research subjects provided this is within the scope of the research and has been provided for in the grant proposal and approved by MOE.

Purchase of Equipment	
General policy	There shall be <u>no purchase of equipment 3 months before the completion date of the project</u> . The completion date of the project refers to latest approved completion date.
IT equipment	Not allowed. Purchase of computer equipment and printers are generally not allowed <u>unless these are deemed essential to the project, specifically provided for in the grant proposal and approved by MOE</u> . Purchase of IT equipment must be in accordance with the IT policy of the host institution regardless of source of funds.
Purchase of Personal Digital Assistants (PDAs), handphones, etc	Not allowed, unless these are deemed essential to the project, specifically provided for in the grant proposal and approved by MOE.
Office equipment	Not allowed unless these are deemed essential to the project, specifically provided for in the grant proposal and approved by MOE.
Office furniture & fittings	Not allowed unless these are deemed essential to the project, specifically provided for in the grant proposal and approved by MOE.
Cost of capital works and general infrastructure (including the costs associated with the establishment and running of the Grant Administration Office)	Not allowed unless specifically provided for in the grant and approved by MOE.