Purpose

The Research Grants Council (RGC) is inviting the eight University Grants Committee (UGC)-funded universities to submit preliminary proposals for the Theme-based Research Scheme (TRS) 2021/22 (Eleventh Round).

Objectives of the Scheme

2. The objective of this scheme is to focus academic research efforts of the UGC-funded universities on themes of strategic importance to the long-term development of Hong Kong.

Preliminary Proposals

3. All applications should be made under one of the research themes and one of the grand challenge topics under the respective theme as listed below:

(a) Promoting Good Health
   1. Infectious Diseases
   2. Understanding Disease Mechanisms to Improving Health
   3. Stem Cells and Regenerative Medicine
   4. Wellness Enhancement

(b) Developing a Sustainable Environment
   1. Water Pollution and Water Treatment
   2. Sustainable Built Environment
   3. Energy Conservation, Conversion and Harvesting
   4. Air Quality
   5. Food Production and Food Security

(c) Enhancing Hong Kong’s Strategic Position as a Regional and International Business Centre
   1. Hong Kong’s Future as an International Financial Centre
   2. Promoting Hong Kong’s Business through Networking Capability
   3. Promoting Hong Kong as a Centre of Excellence for Business Services
   4. Innovation Ecology and Business Creation
   5. Financial Technologies (FinTech) and Regulatory Technologies (RegTech)

(d) Advancing Emerging Research and Innovations Important to Hong Kong
   1. Big Data
   2. Imaging, Robotics and Smart Manufacturing
   3. Urban Infrastructure and Smart City
   4. E-learning and Digital Citizenship
   5. Artificial Intelligence

4. General information common to the four themes are set out in Annexes A and B.
Details about the grand challenge topics are set out in Annex C.

**One-off Additional Funding for COVID-19 and Other Novel Infectious Diseases**

5. In response to the Coronavirus Disease 2019 (COVID-19) epidemic and its evolving global impact, the RGC has allocated a one-off additional funding of $100 million under this round of the TRS exercise to support the UGC-funded sector in conducting research related to COVID-19 and other novel infectious diseases (NIDs). The $100 million additional allocation will be designated for proposals related to COVID-19 and NIDs and submitted under any grand challenge topics of the four TRS research themes. Applications of COVID-19 research and those projects that may be completed early will be given priority. The usual TRS budget will be competed by all other TRS proposals.

**Assessment Criteria**

6. The preliminary proposals will be assessed based on the following criteria:

   (a) **Qualification as world-leading by international standards**

   • Is the proposal likely to achieve new results at the top level of excellences, as measured by international standards? Does the proposal address an intellectually challenging problem?

   • Is the proposal focused and structured in a way that it would have a high potential to create a significant academic impact within the designated theme and grand challenge topic?

   (b) **Impact to Hong Kong**

   • Does it have relevance to the future social or economic development of Hong Kong, especially in areas unique to Hong Kong or where Hong Kong enjoys a comparative advantage?

   (c) **Credentials of the project team**

   • Are the team members considered to be international stature by their peers in the field? This applies in particular to the Project Coordinator (PC) and Co-Principal Investigators (Co-PIs).

   • Does the proposal build on existing strengths and achievements? If the proposal contains topics that are relatively new to the project team, does the project team have sufficient intellectual and infrastructure resources that would allow successful delivery of new ventures?

   • Does the team have the potential for greater impact through such funding awarded by the TRS?

   (d) **Existence of a clear strategy**

   • Does the proposal have a clear strategic direction and plan?

   • Is there coherence in terms of an integrated and focused programme of research, research training, teaching and knowledge transfer?

   • Are there milestones and deliverables structured in a reasonable and achievable manner, based on the proposed timeline and resources?

   (e) **Sound structure for an excellent research project**

   • Does the project team have a sound system of governance?
• If the proposed project involves collaboration among multiple institutions and/or multi-disciplinary teams, do the collaborating parties know their clear roles and responsibilities? Is the proposed collaboration necessary for success, or is it superficial?

• Is there stakeholder (e.g. industry, government, etc.) involvement in steering the project? Is the involvement meaningful for impacting the development of Hong Kong?

7. The template on Call for Preliminary Proposals is in Annex D while an implementation timetable is in Annex E.

8. All applications must be submitted to the UGC Secretariat through the Research Office of the coordinating university **by 5:00 pm on 29 September 2020.** Please provide two hard copies and one soft copy of the proposals (allows search function and with size up to 5MB per proposal). The soft copy should contain all the information as presented in the hard copy. Please save all files in one CD or one USB memory stick, with the file names identical to the project reference number specified in the fifth paragraph of Annex D.


**Code of Conduct**

10. The RGC is fully committed to the principle of honesty, integrity and fair play in the conduct of its business. All application should comply with the RGC Code of Conduct which is available on the RGC website https://www.ugc.edu.hk/doc/eng/rgc/guidelines/code/code_of_conduct.pdf.

**Enquiries**

11. Enquiries about this call and other related matters about the TRS should be directed to the Research Offices of the coordinating universities, which, if in doubt, should consult the UGC Secretariat for clarification. Also, correspondence regarding TRS matters including enquiries, appeals and complaints should be made through the Research Offices of the coordinating universities. Their contact details are as follows:

Ms Cecilia Sun
City University of Hong Kong
83 Tat Chee Avenue
Kowloon Tong
Kowloon

Tel.: 3442 6832
Fax: 3442 0136

Mr Fiona Wong
Hong Kong Baptist University
Kowloon Tong
Kowloon

Tel.: 3411 6499
Fax: 3411 5133

Ms Connie Lam
Lingnan University
8 Castle Peak Road
Tuen Mun
New Territories

Tel.: 2616 7683
Fax: 2591 9618
Ms Fiona Lee
The Chinese University of Hong Kong
Shatin
New Territories
Tel.: 3943 5335
Fax: 3942 0993

Miss Christine Yeung
The Hong Kong Polytechnic University
Hung Hom
Kowloon
Tel.: 2766 4046
Fax: 2355 7651

Ms Catherine Leung
The Hong Kong University of Science and Technology
Clear Water Bay
Kowloon
Tel.: 2358 6946
Fax: 2358 1541

Ms Lo Hung
The University of Hong Kong
Pokfulam Road
Hong Kong
Tel.: 2219 4889
Fax: 2803 0558

Ms Clara Fong
The Education University of Hong Kong
10 Lo Ping Road
Tai Po
New Territories
Tel.: 2948 7700
Fax: 2948 7697

RGC
July 2020
General Points Applicable to the Four Themes

(a) Preliminary proposals are called to improve the efficiency of both proposal preparation and peer reviewing process.

(b) The Research Grants Council (RGC) encourages collaboration amongst universities/disciplines with the view that complex problems and high impact projects would often require participation of talents from different organisations/disciplines. The formation of research team would best be completed at the beginning of the project though new talents may join the team at various stages of the investigation when needed.

(c) The RGC encourages evidence-based research and that data collected in RGC funded projects should be made available to other researchers in a timely manner.

(d) It would be best to involve stakeholders in all phases of the project, from steering of the research direction at the beginning to transferring the results to impact the target sector of the society.

(e) Applicants who contemplate applying for funding support from the Innovation and Technology Fund at a later stage may provide a technology transfer plan in the preliminary proposal for advance information of the Innovation and Technology Commission. This plan will not be assessed by the RGC for the purpose of shortlisting proposals, i.e. the assessment criteria as set out in the Call for Preliminary Proposals will not be affected.

(f) The proposal should include a knowledge dissemination plan to communicate the project outcomes to not only the research community but also other stakeholders such as the general public, relevant industrial sectors and policy makers.

(g) The project should have a plan for the training of future research talents and a plan to transfer relevant research results to benefit education such as degree programs, course work, etc.

(h) The maximum duration of a project should be five years, and there will be sunsetting provisions prescribing a review at two years and four years after the start of the project. The project team could submit a proposal approaching the end of the project to continue the research initiative or bring the research efforts to a more advanced phase.

(i) The total approved budget for a funded project comprises (i) direct project cost; (ii) on-costs to be provided directly to university’s management to cover the overhead expenditure of the project (the on-cost rate for the TRS projects funded in 2020/21 will be 27% of the direct project cost); and (iii) annual allowance of the Project Coordinator (PC1) (the current rate of PC allowance is $0.359 million per year).

(j) The ceiling of direct project cost per project to be awarded by the RGC is $75 million (or $15 million per year for up to five years). Projects with exceptional reasons and

---

1 An annual allowance of up to a maximum of two-month average salary of a Chair Professor will be provided to each funded project to release/partially release the PC from his/her normal teaching and administration duties to focus his/her efforts on the research project. There is no need for the PC to apply and the allowance will be disbursed to respective coordinating universities.
justification may be allowed to exceed the $75 million direct project cost limit. There is no funding floor for the projects. Within the $75 million direct project cost limit, projects of different scale can apply. With reference to the past exercises, the typical funding per project is in the range of $10 million to $50 million, inclusive of on-costs and PC allowance.

(k) Coordinating universities are required to commit at the application stage that they would contribute 50% of the total equipment cost (irrespective of the number of items), in monetary terms, for a funded project if the total equipment cost of the project is $2 million or above. This matching requirement applies to the direct cost of the equipment item(s).

(l) Coordinating universities are required to commit at the application stage that they would contribute 10% of the total approved budget, in monetary terms, for a funded project. This matching requirement applies to the direct project cost (excluding the total equipment cost of the project if the total equipment cost of the project is $2 million or above), on-costs and PC allowance.

(m) Applicants are required to provide a “Pathways to Impact Statement” in their applications to articulate how to secure impact, what they propose to do and how they propose to start gathering evidence on impact from the outset. Assessment on research impact of the proposals will be based on the “Pathways to Impact Statement” provided by the applicants.

(n) Each application should be submitted with only one applicant nominated as the PC and no applicant should submit more than one application in this capacity in the same round of the TRS exercise.

(o) To ensure that the PCs of major projects will spend reasonable time on project management, a PC of major projects (i.e. projects funded under the TRS and the Areas of Excellence Scheme) should hold no more than two on-going projects at the same time. The PCs and coordinating universities are required to commit at the application stage that if the project is funded, the PC would spend sufficient time on the project throughout the project period. The length of time spent should be commensurate with the PC allowance for a funded project to release / partly release the PC from normal teaching and administration duties to focus efforts on the research project.

(p) To enhance project monitoring, the PC of each funded project is required to set up an external advisory board upon commencement of the project. The coordinating university of each funded project is required to submit an audited financial statement for the concerned TRS project within six months from the date of project completion / termination.

(q) PCs of funded projects are required to include in the completion reports URL links to the university’s repositories or the publishers’ websites so that the public can have access to the manuscripts or journal articles (though the public may be required to subscribe at the publishers’ websites). They are also encouraged to include in the completion reports the data repositories where research data of their projects can be accessed and shared, where appropriate.

(r) As an initiative to highlight the impact of the TRS on research and societal development in Hong Kong and worldwide, coordinating universities are required to commit at the application stage that if the project is funded, they would provide a video clip on the research project to publicise the project’s research achievements within three months upon satisfactory rating of completion report. The video should be bilingual (e.g. English narration with Chinese subtitles or vice-versa), about three minutes’ long and in a format supported by YouTube. It will be vetted by the relevant Monitoring and Assessment Panel.
PCs of completed projects are also encouraged to upload the video clips onto their universities’ own websites or video channels.

(s) Applicants should not mention anything not related to the research proposal per se in the application form (such as describing the funding rules) with a view to communicating to the reviewers that the latter should give a certain rating if they intend to support the projects. Should such act be discovered, the applications concerned will be disqualified.

(t) Applicants should not communicate with RGC and Panel Members on the applications submitted with a view to influencing the latter in assessing their applications. Should such act be discovered, the applications concerned will be disqualified.

(u) The shortlisting / funding decisions of the RGC are based on the careful assessments and considered judgement of the TRS Selection Panel. It is inappropriate to assume that any subsets of comments are specifically or solely responsible for the final decision. The funding / shortlisting decisions are final and no appeal will be considered unless in case of a major procedural flaw.
Annex B

Matching Funding for Projects under the
Theme-based Research Scheme 2021/22 (Eleventh Round)

Operational Arrangement

I. Submission of preliminary proposals

- When submitting the preliminary proposal, the project team is required to indicate in the table the total direct project cost proposed, on-costs and PC allowance. The breakdown of the proposed budget and the required matching should also be indicated.

- The university is required to commit under the “University’s Endorsement” section of the preliminary proposal form that the university will contribute 50% of the total equipment cost of the project if the total equipment cost of the project is $2 million or above, and 10% of the total approved budget (excluding the total equipment cost of the project if the total equipment cost of the project is $2 million or above) for a funded project.

II. Submission of full proposals

- When submitting the full proposal, the project team is required to indicate in the table of “Sources of Funding” the cash-flow of the total direct project cost proposed, the cash-flow of direct project cost to be funded by the RGC (maximum $75 million, or $15 million per year up to five years), and the cash-flow of the direct project cost to be funded by university under the matching requirement(s). If the total equipment cost of the project is $2 million or above, the cash-flow for equipment item(s) should be stated separately. The project team is also required to indicate in the table the amounts of on-costs and PC allowance to be funded by the RGC and by university under the matching requirement(s).

- The university is required to re-state the commitment on the university matching fund for the equipment items (if the total equipment cost of the project is $2 million or above) and the total approved budget for a funded project in the “University’s Endorsement and Declaration of Research Ethics / Safety” section of the full proposal form.

III. Announcement of funding results

- Upon approval of a project, the RGC will announce the total approved budget for a funded project and the RGC grants to be awarded for each funded project.

IV. Monitoring and Assessment of Funded Project

- When submitting the progress reports / review reports / audited financial statement / completion report, the project team is required to apportion the expenditure from different funding sources (i.e. RGC, university and other sources, if any).

V. Return of Unspent Project Fund

- Upon project completion or termination, the unspent RGC funds should be returned to the RGC in accordance with the Monitoring Guidelines to Universities and Project Teams on Projects Funded in 2021/22 (Eleventh Round).
Theme-based Research Scheme 2021/22 (Eleventh Round)

Themes and Topics

Theme 1 – Promoting Good Health

This theme aims to promote health and prevent disease of special importance in Hong Kong and to contribute to the well-being of society at the regional and global levels.

Proposals are sought to address one or more of the following:

1. Infectious Diseases
2. Understanding Disease Mechanisms to Improving Health
3. Stem Cells and Regenerative Medicine
4. Wellness Enhancement

Priority will be given to proposals that:

- develop new knowledge in fundamental mechanisms of disease;
- solve major applied problems in health; develop, use, and/or evaluate novel innovative technologies; or
- provide new knowledge on diseases and conditions of special importance to Hong Kong.

Proposals should give the rationale for the diseases and the approaches selected and how new funding would accelerate discovery or translation that would not be accomplished by current RGC funding mechanisms.

In areas where Hong Kong has established programmes of research, Theme-based support could also be used to establish how to overcome "barriers" in disseminating or translating new discoveries to improving and maintaining individual or population health; building a cadre of future scientists; making the transition to international prominence.

Topic 1: Infectious Diseases

Research proposals should focus on infectious diseases which are prevalent in Hong Kong and neighbouring region, or areas that the Hong Kong academic community has a competitive edge. Possible areas include, but are not limited to:

- hepatitis viruses;
- influenza;
- EBV and nasopharyngeal carcinoma;
- HIV;
- drug-resistant pathogens;
- emerging infectious diseases;
- novel diagnostics;
- treatment/drug discovery/traditional Chinese medicine;
- vaccine and other prevention measures; and
- psychosocial and cultural determinants of health behaviours relevant to the transmission and prevention of infectious diseases.

Topic 2: Understanding Disease Mechanisms to Improving Health

Research proposals should focus on interdisciplinary study of fundamental biology to improving health with special relevance to Hong Kong and the region, including but not limited to
nasopharyngeal carcinoma, hepatic and lung cancer, neurological diseases and aging, and Down's syndrome. Possible areas include, but are not limited to:
- understanding of the molecular and cell biology of these diseases;
- discovery, development and clinical validation of putative bio-markers;
- novel diagnostic and therapeutic strategies;
- drug development;
- bioinformatics;
- human microbiome in health and disease; and
- prediction, prevention and treatment of human disease.

**Topic 3: Stem Cells and Regenerative Medicine**
Research proposals should focus on the study of stem cells and regenerative medicine that exploit the special competitive advantages of the Hong Kong research environment such as access to embryonic stem cell and cost effective animal facilities. Possible areas include, but are not limited to:
- embryonic stem cells;
- postnatal and adult stem cells;
- induced pluri-potent stem cells and reprogramming;
- tissue engineering and the development of novel technologies for the culture, analysis and imaging of stem cells;
- genome editing;
- organ regeneration;
- disease modelling;
- application for therapeutic development; and
- production of therapeutically relevant cell types from stem cells, their validation in animal models and/or clinical trials and associated manufacturing challenges.

**Topic 4: Wellness Enhancement**
Research proposals should focus on interdisciplinary studies that identify and promote modifiable factors associated with good health outcomes in individuals throughout their lifespan and communities of Hong Kong and Mainland China that could transform the field of health promotion and public health globally. Possible areas include, but are not limited to:
- the formulation and testing of bio-psycho-social models of health;
- the examination of sleep factors and circadian rhythms as determinants of good health;
- lifestyle interventions to prevent chronic disease; and
- the behavioural, communication, and economic science and technologies that identify and promote healthy life-style, including but not limited to developing and mobilizing supportive social relationships/communities for wellness enhancement.
Theme 2 – Developing a Sustainable Environment

This theme aims to promote a responsible form of development friendly to our environment. Given the trans-boundary nature of environmental problems, research collaboration with other associated areas is strongly encouraged.

Under this theme, proposals are sought to address fundamental and applied research issues on one or more of the following four topics:

1. Water Pollution and Water Treatment
2. Sustainable Built Environment
3. Energy Conservation, Conversion and Harvesting
4. Air Quality
5. Food Production and Food Security

Priority will be given to proposals that:
- provide novel analytical approaches;
- develop innovative technologies;
- provide fresh empirical evidence, science-based simulation and modelling; and
- provide practical insights to educate the public and to assist policy decisions by government and industry on issues of importance to Hong Kong, Big Bay Area and/or the Belt and Road areas, and beyond.

Topic 1: Water Pollution and Water Treatment
Proposals should focus on, but are not limited to:
- research pertaining to the sustainable use of water resources;
- enhancement of water quality;
- chemical characterization and mitigation of pollutants;
- social and economic impacts of water pollution;
- innovative technologies on water treatment;
- identification of the sources and transport mechanisms of the pollutants; and
- protection of the health and beneficial uses of the aquatic ecosystem in Hong Kong, Big Bay Area and/or the Belt and Road areas.

Topic 2: Sustainable Built Environment
Proposals should focus on, but are not limited to, enhancing the sustainability of the built environment, especially issues relating to the provision of high quality working and living environments, green buildings, and the social, economic and environmental impact of urban development. Sub-topics suggested are:
- integrated building design;
- building materials;
- indoor air quality;
- wind induced vibrations;
- urban planning in relation to the ventilation;
- energy consumption; and
- energy generation, etc.

Topic 3: Energy Conservation, Conversion and Harvesting
Proposals should focus on, but are not limited to, multidisciplinary research on:
- photovoltaics;
- solid-state lighting;
- energy conversion and storage systems;
- smart grids; and
• solar, wind and wave energy harvesting.
The proposed projects should also aim at creating intellectual property rights and patents to help transform Hong Kong into a knowledge-based economy.

**Topic 4: Air Quality**
Proposals should focus on, but are not limited to, the challenge to improve the air quality of Hong Kong, Big Bay Area and/or the Belt and Road areas through integrated multidisciplinary research and involvement of stakeholders including the government, business and NGOs. Radically new approaches directed towards monitoring, experimental modelling, mapping, chemical characterization and mitigation of air-borne pollutants to allow the formulation of appropriate policy and strategy of air quality management are encouraged.

**Topic 5: Food Production and Food Security**
Proposals should focus on food production and food security including, but not limited to:
• agricultural biotechnology and hydroponics;
• food safety, food toxicity; and
• food supply chain and waste treatment.
Theme 3 – Enhancing Hong Kong’s Strategic Position as a Regional and International Business Centre

To capitalize on the emerging economic significance of China, particularly in the Big Bay Area and/or the Belt and Road areas, it is of paramount importance for Hong Kong to deepen its appreciation of the dynamic development of regional Asian economies so as to enhance its position as an economic hub.

Under this theme, proposals are sought to address fundamental research issues on one or more of the following topics:

1. Hong Kong’s Future as an International Financial Centre
2. Promoting Hong Kong's Business through Networking Capability
3. Promoting Hong Kong as a Centre of Excellence for Business Services
4. Innovation Ecology and Business Creation
5. Financial Technologies (FinTech) and Regulatory Technologies (RegTech)

The success of various business sectors in Hong Kong can be attributed to multiple enabling factors including Hong Kong's global connectivity and strong links with the Mainland; its investments in human resources (including, but not limited to education); and Hong Kong's legal and governance systems. These enablers are considered relevant to all the topics identified under this theme.

Priority will be given to proposals that:
- provide novel analytical approaches;
- develop innovative methodologies;
- offer new theoretical insights; and
- generate fresh empirical evidence that yield practical insights for policymakers and relevant stakeholders on issues of importance to Hong Kong's economy including but not limited to the barriers or problems that may have hindered Hong Kong’s adoption of new technologies.

Proposals should have strong foundations in theory, and be grounded in the extant research within the relevant fields.

Topic 1: Hong Kong’s Future as an International Financial Centre

Research proposals should advance analytical, empirical and institutional knowledge that is relevant to enhancing Hong Kong's role as a leading international financial centre. Topics of interest include, but are not limited to:
- the economics of financial innovation;
- the sources, mechanisms and management of global systemic risk;
- issues relating to market microstructure in Asian financial markets;
- internationalization of the Renminbi;
- consequences of the liberalization and global integration of Chinese financial markets;
- the economic geography of Hong Kong's strategic location; and
- the development of corporate social responsibility, including but not limited to green bond financing.

Topic 2: Promoting Hong Kong’s Business through Networking Capability

Research proposals should advance analytical, empirical and institutional knowledge that is relevant to enhancing Hong Kong’s networking capability relating to the flows of goods, services and capital across global markets. Topics of interests include, but are not limited to:
- the contribution of transport and logistics networks to Hong Kong's growth and future development;
Hong Kong's role as an orchestration point for supply network coordination in emerging economies;
the significance of cultural and linguistic factors in expanding business networks;
multiculturalism as a business capability;
business applications of new domains in social media and crowd sourcing; and
the impact of social networks on corporate decisions and strategies.

**Topic 3: Promoting Hong Kong as a Centre of Excellence for Business Services**
Research proposals should advance analytical, empirical and institutional knowledge that is relevant to enhancing Hong Kong's role as a centre of excellence for innovation in business services. Topics include, but are not limited to:
- mechanisms for inter-organizational learning and innovation;
- intellectual property rights management;
- optimization methods for service delivery;
- extensions to the provision of public and social services;
- extensions to the cultural and media industries; and
- the cultural and social psychological aspects of employee motivation in service organizations.

**Topic 4: Innovation Ecology and Business Creation**
Research proposals should advance analytical, empirical and institutional knowledge that is relevant to enhancing the ecosystem and the creation and incubation of new business and the revitalization of existing enterprises. Areas of study include, but are not limited to:
- technology commercialization;
- family businesses;
- business alliances;
- governance mechanisms and capital allocation in high-growth businesses;
- growth strategies for small and medium sized enterprises;
- structure and processes in social enterprises (for-profit entrepreneurs, public-private alliances, and non-governmental organizations);
- the culture and social psychology of entrepreneurs;
- application of design thinking;
- strategies to increase creative thinking and creativity;
- entrepreneurial decision-making;
- talent development and retention to foster entrepreneurship and innovation;
- risk-taking and opportunity identification; and
- corporate entrepreneurship.

**Topic 5: Financial Technologies (FinTech) and Regulatory Technologies (RegTech)**
Research proposals should advance analytical, empirical and institutional knowledge that is relevant to enhancing the development and transformation of FinTech and RegTech in Hong Kong with a view to bringing societal and/or economic impact to Hong Kong. Topics of interests include, but are not limited to:
- cybersecurity;
- payments and securities settlement;
- investment, equity crowdfunding, peer-to-peer lending and trading platforms;
- blockchain and distributed ledger technologies;
- wealth management (WealthTech);
- insurance models and products (InsurTech);
- compliance and risk monitoring technologies; and
- open banking and data privacy, residence and protection.
**Theme 4 – Advancing Emerging Research and Innovations Important to Hong Kong**

This theme aims at advancing our knowledge and facilitating the development and application of research innovations important to Hong Kong. This will contribute to powering world-class industries and developments at the local, national, regional and global levels, and capitalize on Hong Kong’s existing strengths in research and innovation. The theme echoes the great importance the Government attaches to the innovation and technology industries as well as research in humanities and social science.

Proposals are sought to address one or more of the following topics:

1. Big Data
2. Imaging, Robotics and Smart Manufacturing
3. Urban Infrastructure and Smart City
4. E-learning and Digital Citizenship
5. Artificial Intelligence

The research should impact on the creation, application, and transfer of knowledge in Hong Kong, and possibly the Mainland and the region, and should foster interaction with our neighbours and help Hong Kong researchers leverage their research strengths.

Priority will be given to proposals that involve inter-institutional and cross-disciplinary collaborations, both basic and applied. Partnering with stakeholders including Government agencies and the industrial sector is encouraged.

**Topic 1: Big Data**
This topic covers computational and analytical approaches suitable for handling very large and potentially heterogeneous data. Activities may range from machine-learning research, development of distributed computational approaches and cloud-enabled implementation technologies, to cross-domain big data analytics. Research proposals should be motivated by applications relevant to Hong Kong, including but not limited to:
- smart cities;
- e-learning;
- data-driven policy-making;
- health;
- e-finance;
- mobile data; and
- the internet-of-things.

**Topic 2: Imaging, Robotics and Smart Manufacturing**
Research proposals should focus on:
(1) image acquisition, processing and analysis, and visualization for sub-topics, including but not limited to:
- disease detection, diagnostics and monitoring;
- sensing and actuation; and
- real-time 3-dimensional modelling;

(2) smart robotic technologies in applications, including but not limited to:
- autonomous navigation;
- bio-manipulation;
- manufacturing; and
- services in high-risk environments; and
(3) smart manufacturing in technologies, including but not limited to:
- bio-printing;
- medical devices; and
- complex multi-material composites.
Investigations on nanoscale technologies and manufacturing and the social implications of human-machine interactions are also encouraged.

**Topic 3: Urban Infrastructure and Smart City**
This grand challenge in urban infrastructure primarily addresses the research and implementation of the “Smart City”, which involves the use of technologies to provide intelligent response to the needs of the city. Proposals should focus on smart buildings, intelligent transportation systems, urban geo-informatics which studies, including but not limited to:
- the structure, algorithms, behaviour, and interactions of natural and artificial systems in the urban context;
- resilience of infrastructure networks such as water, power, gas, transportation, and communication; and
- smart ID and its applications.

**Topic 4: E-learning and Digital Citizenship**
Research proposals should focus on advancing digital technologies for:
- learning;
- development of twenty-first century skills;
- teaching creativity;
- problem-solving and innovation;
- social inclusion;
- equity and the digital divide;
- life-long learning and policy-implications; and
- the role of other stakeholders including parents, employers and professional associations.
Research is also encouraged on how the provision of digital literacy evolves as labour market demands and education systems change.

**Topic 5: Artificial Intelligence**
Research proposals should focus on advances in artificial intelligence for societal, health and economic benefit, including but not limited to:
- increasing economic prosperity;
- enhancing healthcare applications;
- improving educational opportunity and quality of life; and
- enhancing safety of the society.
Given the massive scale, keen competition and daunting challenges, substantial support in kind or in other forms from major players, in particular commercial entities which are deeply involved in this area, would be a distinct advantage for any project to be considered favourably.
Annex D

Research Grants Council
Theme-based Research Scheme 2021/22 (Eleventh Round)

Template for Preliminary Proposal Preparation

This template provides general reference for the preparation of preliminary proposals for the Theme-based Research Scheme (TRS) 2021/22 (Eleventh Round) of the Research Grants Council (RGC). Taking into account the nature of their proposals, the Project Coordinators (PCs) may apply this template as appropriate and include other areas not covered in this template. They should try to address the questions posed in the template as far as possible in preparing their preliminary proposals.

Preliminary proposals should provide sufficient information about the proposed project to allow assessment of the main ideas and approaches and how it is appropriate as a TRS proposal as opposed to other existing funding programs.

The preliminary proposals should consist of four mandatory parts and one optional part, namely:

Mandatory parts

(Font: Times New Roman; font size: 12 point; margin: 2.5 cm all around; spacing: single-line spacing)

(I) Summary of the Research Proposal – should not exceed one A4 page¹;

(II) Details of the Research Proposal – should not exceed five A4 pages¹;

(III) Pathways to Impact Statement – should not exceed two A4 pages¹;

(IV) Re-submission of a Proposal not Supported Previously – should not exceed one A4 page¹;

(VI) Confirmation of the Project Co-ordinator (PC); and

Optional part

(V) Technology Transfer Plan – should not exceed one A4 page¹

Any pages in excess of the above page-limit, including the curriculum vitae of personnel other than the PCs and Co-Principal Investigators (Co-PIs) will be removed by the Secretariat without prior notice.

A project reference to be assigned by the Research Office of the coordinating university, in the format of Txx-xxx/21-N/R/W (N for new proposal, R for re-submission and W for renewal proposal) should be placed on the right top corner of the cover page of each part.

¹ A two-sided A4 page will be counted as two pages.
Theme-based Research Scheme 2021/22 (Eleventh Round)

Preliminary Proposal

This application is * [ ] related / * [ ] not related to COVID-19 and novel infectious diseases (NIDs)².

(I) Summary of the Research Proposal

This summary should not exceed one page and should include:

1. **Particulars of the project:**
   (a) Project title
   (b) Theme
   (c) Grand challenge topic
   (d) Primary field code and area ³
   (e) Secondary field code and area ³
   (f) Project duration
   (g) Direct project cost in the proposed budget to be funded by the RGC ⁴ (i.e. Figure R(3) in Item 7)
   (h) Nature of application: New / Re-submission / Renewal*
      (For renewal application, please provide the reference number of the most-recent on-going / completed project: ______________)
      * Please delete as appropriate.

2. PC (only one for each proposal), and the Co-PIs.

3. A succinct summary of the proposed project. This summary should present clearly the intellectual merit of the proposed project.

(II) Details of the Research Proposal

This section should not exceed five pages and should include:


---

² The one-off additional funding of $100 million under the TRS 2021/22 exercise is designated for proposals related to COVID-19 and NIDs.

³ Please refer to the list of subject areas in the Explanatory Notes used by the General Research Fund exercise of the RGC (GRF2), which is available on the RGC website: http://www.ugc.edu.hk/doc/eng/rgc/form/GRF2.pdf.

⁴ It includes 50% of the total equipment cost of the project if the total equipment cost of the project is $2 million or above and 90% of the total direct project cost (excluding the total equipment cost of the project if the total equipment cost of the project is $2 million or above), but excludes on-costs and PC allowance.
5. The approach and methodology to be employed to achieve the mission, goals and deliverables.

6. Collaboration plan, the strength of the project team and how the synergy of team members from different disciplines will lead to advancement in fundamental knowledge and achieve the intended impact within the selected grand challenge topic.

7. Project budget in the following format:

<table>
<thead>
<tr>
<th>Proposed budget</th>
<th>Direct Project Cost</th>
<th>On-costs and PC Allowance</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Direct project cost (excluding the total equipment cost of the project if the total equipment cost is $2M or above (irrespective of the no. of items)):</td>
<td>R(1) 90% from RGC: $_____M</td>
<td>R(4) 90% from RGC: $_____M</td>
</tr>
<tr>
<td></td>
<td>U(1) 10% from university: $_____M</td>
<td>U(4) 10% from university: $_____M</td>
</tr>
<tr>
<td>(2) Total equipment cost if the total equipment cost is $2M or above (irrespective of the no. of items):</td>
<td>R(2) 50% from RGC: $_____M</td>
<td>R(5) 90% from RGC: $_____M</td>
</tr>
<tr>
<td></td>
<td>U(2) 50% from university: $_____M</td>
<td>U(5) 10% from university: $_____M</td>
</tr>
<tr>
<td>(3) Total direct project cost [(1) + (2)]:</td>
<td>R(3) [(R(1) + R(2))] $_____M from RGC</td>
<td>R(6) [(R(4) + R(5))] $_____M from RGC</td>
</tr>
<tr>
<td></td>
<td>U(3) [(U(1) + U(2))] $_____M from university</td>
<td>U(6) [(U(4) + U(5))] $_____M from university</td>
</tr>
</tbody>
</table>

| Funding from RGC [R(3) + R(6)]: | $_____M |
| Funding from university [U(3) + U(6)]: | $_____M |

| (7) Budget to be supported by sources other than RGC and the required university matching fund (please specify, if any): | $_____M |

| Total [(3) + (6) + (7)]: | $_____M |

In drawing up the budget, please note that PC, Co-PIs, Co-Investigators (Co-Is), faculty positions (e.g. Research Assistant Professors), administrative staff and any of the collaborators are not regarded as staff and must not be remunerated with salaries. For reference, the annual salary ceilings of RA and SRA adopted in the TRS 2020/21 (Tenth Round) were $0.311 million and $0.499 million respectively.

5 All costs stated in this preliminary proposal should be in Hong Kong dollars. Figures should be rounded to three decimal places.

6 The current rate of on-costs is 27% of the total direct project cost.

7 The PC allowance should be calculated based on the indicative rate of $0.359 million per year. The final rate of PC allowance will be announced at the time of funding approval.
8. Why the proposal should preferably be funded by the TRS instead of other UGC/RGC funding schemes?

(III) Pathways to Impact Statement

This section should not exceed two pages.

9. (a) The Pathways to Impact Statement should address the following:

(i) Who are the potential beneficiaries of the proposed research in the short (1-3 years), medium (4-10 years) and long term (over 10 years)?

(ii) How will the potential beneficiaries benefit? What will be the objective demonstrable/measurable benefits beyond academia?

(iii) What will be done during and / or after the project to increase the likelihood of achieving the identified benefit and reaching the identified beneficiaries?

(b) The statement should be written in a way that is comprehensible to a lay person.

(c) For the purpose of TRS, impact shares the same definition in Research Assessment Exercise 2020, i.e. the demonstrable contributions, beneficial effects, valuable changes or advantages that research qualitatively brings to the economy, society, culture, public policy or services, health, the environment or quality of life; and that are beyond the academia.

(IV) Re-submission of a Proposal not Supported Previously

10. The PC should provide details in case the proposal (including its component) is a re-submission (submitted to the UGC / RGC before) or is largely similar to a proposal that has been submitted to the UGC / RGC or other funding bodies (similarity amounting to 50% or more with a previous proposal should be regarded as a re-submission). It is the responsibility of the PC to declare clearly and honestly whether his / her proposal is a re-submission. The PC should re-visit the main concerns / suggestions previously expressed by all reviewers if an earlier / similar version of the proposal has been assessed before and provide a summary of all of his / her previous submissions and the revisions made to each of the previous submissions to facilitate the selection panel’s assessment. The RGC reserves the right to discount the rating of an application for its failure to acknowledge the fact that it is a re-submission of a previous application. This section allows the applicant to respond to those comments, and explain whether and what changes have been incorporated in the latest proposal. Some reviewers’ comments may be more agreeable / disagreeable than others. However, if a rebuttal is offered, it should be scholarly and preferably measured. Under the existing policy, re-submitted proposals will be treated as fresh applications in peer-review and handled in an identical manner to other new applications. Although the TRS Selection Panel will take into account the PC’s responses to the reviewers’ comments, the TRS Selection Panel is not obliged to invite the same group of reviewers for assessment of the new application.

(a) Is this proposal a re-submission or largely similar to a proposal that has been submitted to but not supported by the UGC / RGC or other funding agencies? An affirmative reply should be given if a component of this proposal is a re-submission.
If yes, please state the funding agency(ies) and the funding programme(s):

<table>
<thead>
<tr>
<th>Reference No.(s) [for UGC / RGC projects only]:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project title(s) [if different from Section I Part 1(a) above.]:</td>
</tr>
<tr>
<td>Date (month / year) of application:</td>
</tr>
<tr>
<td>Outcome:</td>
</tr>
<tr>
<td>Number of times of re-submission under the TRS since its first submission and proposal reference number(s) (if applicable):</td>
</tr>
</tbody>
</table>

(b) If this proposal is a re-submission under the TRS, please provide a summary of all the previous submissions and the revisions made to each of the previous submissions.

(V) Technology Transfer Plan (Optional)

Applicants who contemplate applying for funding support from the Innovation and Technology Fund (ITF) at a later stage may provide a technology transfer plan in the preliminary proposal (in a separate page and a separate file in PDF format) for advance information of the Innovation and Technology Commission. This plan will not be assessed by the RGC for the purpose of shortlisting proposals. The technology transfer plan should include information such as:

11. (a) Activities to be undertaken to:

- disseminate the R&D deliverables;
- realise the application of the R&D deliverables in the public sector, i.e. the R&D deliverables being used in government departments, public bodies, trade associations, charitable organisations, etc.; and / or
- market the R&D deliverables in the commercial world, e.g. target markets and customers.

(b) Potential industry partners for technology transfer / manufacturing. If possible, please provide information in relation to the future positioning of the product / technology in the market.

(c) Associated / complementary technology development projects which may synergise with this project for technology transfer. In this case, please give some brief information of such project(s).

(d) Future plans to apply for ITF to support the applied research component of the proposed project.
(VI) Confirmation of the PC

12. I confirm that all the Co-PIs (and Co-Is if any) listed in this preliminary proposal have explicitly agreed to serve in the project team and a copy of the preliminary proposal has been provided to each of the Co-PIs (and Co-Is if any). I will provide written proof on the collaboration upon the request of the RGC / Secretariat.

Signature : _______________________
Name of PC : _______________________
  (in BLOCK letters)
Designation : _______________________
University : _______________________
Date : _______________________
**Brief curriculum vitae of all key members**

A one-page curriculum vitae should be prepared for the PC and each of the Co-PIs. A table summarising key information on the PC and Co-PIs should be provided in the format below (this table is not counted towards the five-page limit):

<table>
<thead>
<tr>
<th>Project team member</th>
<th>Surname</th>
<th>First name</th>
<th>ORCID iD&lt;sup&gt;8&lt;/sup&gt;</th>
<th>Post</th>
<th>Unit / Department / University</th>
<th>Number of hours per week to be spent on this project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Coordinator (PC)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Co-Principal Investigator (Co-PI)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

<sup>8</sup> ORCID is a unique researcher identifier facilitating the identification of researchers with expertise in specific areas. Local applicants in all capacities are required to submit the ORCID in their applications. Non-local academics in the capacities of Co-PIs or Co-Is are also encouraged to submit their ORCID iDs in the applications. Applications submitted by applicants without valid ORCID iDs would not be considered.
UNIVERSITY’S ENDORSEMENT

(To be completed and signed by the appropriate authority of the PC’s university. The university should confirm that it has evaluated and given support to the application before submission to the RGC. It is required to verify that the PC fully meets the criteria for and is not debarred from applying for UGC / RGC funds. Before giving the various confirmations required, the university should satisfy itself that the PC in all respect meets the requirement of the RGC and can complete the project, if funded. It is also required to report to the RGC immediately if the PC subsequently becomes ineligible for the grant.

To safeguard the interests of the researcher and the university, the awardee university bears the primary responsibility for prevention, detection and investigation of research misconduct, including but not limiting to misuse of funds, data falsification, plagiarism and double-dipping. The university is strongly encouraged to vet the grant applications using anti-plagiarism software before submitting them to the RGC.)

(* Please tick ‘✓’ in the appropriate boxes.)

I confirm that:

1. Staff eligibility requirement for the Theme-based Research Scheme
   (please refer to Appendix to Annex D for details)

   (a) The application has been evaluated and endorsed by the university for submission to the RGC;

   (b) the Project Coordinator, in the staff grade ______, meets fully the stipulated staff eligibility requirement for the Theme-based Research Scheme set out in the Appendix and is not debarred from applying for UGC / RGC grant;

   [where the Project Coordinator is newly appointed, the university has formally entered into a contract of service with him / her on or before 1 November 2020 and the contract requires him / her to report duty on or before 1 June 2021.]

   * □ the PC is / will be primarily engaged in and spending at least 80% of time in degree or higher degree work at the university; or

   * □ the PC is / will be seconded to work full-time or part-time at the following Innovation and Technology clusters at the Hong Kong Science Park with effect from ____________ (mm/yyyy)
     * □ Health@InnoHK
     * □ AIR@InnoHK; or

   * □ the PC is / will be seconded to conduct research in a university or a research institute / body / agency in the Mainland / overseas jurisdiction with effect from ________ (mm/yyyy). [Name of university / research institute / body / agency: ______________________ Region / Country: ______________________]
(c) the Project Coordinator is / will be employed on * □ permanent term or * □ fixed term contract;

[if the Project Coordinator is / will be employed on a fixed term contract, the Project Coordinator has to be still eligible for the Theme-based Research Scheme grant at the time of funding award being made in July 2021 as well as for at least the first year of the project’s planned duration.]

(d) the Project Coordinator * □ is / will be a visiting scholar or * □ is NOT a visiting scholar;

[if the Project Coordinator is a visiting scholar, he / she has to be employed in the university on a full-time basis covering at least one year or the expected duration of the project whichever is the longer.]

(e) university’s endorsement(s) from the relevant university(ies) of all Co-Principal Investigator(s) confirming that the Co-Principal Investigator(s) concerned will have the number of hours per week as declared in the table summarising the key information on the Project Coordinator and Co-Principal Investigators to supervise the proposed project without prejudice to his / her existing commitment in other research work, teaching and administrative duties * □ has / have been sought or * □ is / are being sought. I understand that when the project is funded, university’s endorsement(s) for Co-Principal Investigator(s) would be submitted to the RGC for scrutiny;

(f) the university will inform the RGC as soon as the Project Coordinator ceases to be eligible to apply, receive or hold a Theme-based Research Scheme grant, and will withdraw the application; or recommend to the RGC for approval of a suitable new Project Coordinator, if any, to take over the funded project once it is funded and commenced. The RGC has the discretion to terminate / conclude the project as appropriate; and

(g) the university understands that the Theme-based Research Scheme grant, if given, will be withdrawn if the project does not start within six months of the announcement of funding result without justification to the satisfaction of the RGC. The university should report to the RGC as soon as possible when a Project Coordinator proceeds on no-pay leave / professional leave for a continuous or cumulative period exceeding 183 days within the project period.

2. University’s commitments

(a) The research project under this application * □ is or * □ is not in line with the role of the university;

(b) * □ if the total equipment cost of the project is $2 million or above, the university undertakes to contribute 50% of the total equipment cost of the project (irrespective of the number of items), in monetary terms. The university understands that upon approval of a project, the RGC will only grant 50% of the total equipment cost of the project if the total equipment cost of the project is $2 million or above;

(c) * □ the university undertakes to contribute 10% of the total approved budget (excluding the total equipment cost of the project if the total equipment cost of the project is $2 million or above) for a funded project, in monetary terms, inclusive of on-costs and annual allowance

TRS 2021/22 (Eleventh Round) – Call for preliminary proposals
of the Project Coordinator. The university understands that upon approval of a project, the RGC will only grant 90% of the total approved budget (excluding the total equipment cost of the project if the total equipment cost of the project is $2 million or above), inclusive of on-costs for the whole project and annual allowance of the Project Coordinator;

(d) ☐ the university undertakes to ensure that the Project Coordinator will spend sufficient time on this proposed project throughout the project period. The university confirms that the number of work hours per week to be spent on the project by the Project Coordinator, as declared in the table summarising the key information on the Project Coordinator and Co-Principal Investigators, is commensurate with the annual allowance of the Project Coordinator for a funded project to release / partly release the Project Coordinator from normal teaching and administration duties to focus efforts on the research project. The Project Coordinator will have the declared time to coordinate the project without prejudice to his / her existing commitment in other research work, teaching and administrative duties;

(e) ☐ the university undertakes to ensure that for each funded project, an external advisory board will be set up upon commencement of the project;

(f) ☐ the university undertakes to ensure that an audited financial statement will be submitted by the university within six months from the date of project completion / termination of each funded project;

(g) ☐ the university undertakes to ensure that the Project Coordinator will include in the completion report URL links to the university’s repositories or the publishers’ websites so that the public can have access to the manuscripts or journal articles (though the public may be required to subscribe at the publishers’ websites);

(h) ☐ the university undertakes to provide a video clip to publicise the project’s research achievements within three months upon satisfactory rating of completion report, if the project is funded; and

(i) ☐ this application has or ☐ has not been scanned by anti-plagiarism software.

Signature : _______________________

Name : _______________________

(in BLOCK letters)

Designation : _______________________

University : _______________________

Date : _______________________

RGC
July 2020
Staff Eligibility Requirement for the Theme-based Research Scheme

The Project Coordinator (PC) of a Theme-based Research Scheme (TRS) project must be an academic staff member of an UGC-funded university with conditions of employment meeting ALL the following requirements:

(i) having a full-time\(^1\) appointment in the university proper\(^2\); 

(ii) being in Staff Grades from ‘A’ to ‘I’\(^3\) as defined in the Common Data Collection Format (i.e. from ‘Professor’ to ‘Assistant Lecturer’, see Explanatory Notes for completing the Application Form for General Research Fund 2021/22 (GRF2));

(iii) being primarily engaged in and spending at least 80% of time in degree or higher degree work\(^4\) at the university proper; and

(iv) salary being wholly funded\(^5\) by the university proper.

The following categories of PCs are subject to the following additional requirements besides meeting criteria (i) to (iv) above:

(a) a newly appointed PC should have formally entered into a contract of service with the university on or before 1 November 2020 and the contract requires him/her to report duty on or before 1 June 2021;

(b) a PC who is/will be employed on a fixed term contract, the PC has to be still eligible for the TRS grant at the time of funding award being made in July 2021 as well as for at least the first year of the project’s planned duration; or

(c) a PC who is a visiting scholar, he/she has to be employed in the university on a full-time basis covering at least one year or the expected duration of the project whichever is the longer.

\(^1\) Excluding part-time staff and staff holding honorary appointments.

\(^2\) Excluding schools/arms of continuing education and professional training and other analogous outfits.

\(^3\) Excluding polytechnic staff grades.

\(^4\) A Project Coordinator who is/will be seconded to work full-time or part-time at the two Innovation and Technology clusters (i.e. Health@InnoHK and AIR@InnoHK) at the Hong Kong Science Park; or to conduct research in a university or a research institute/body/agency in the Mainland/overseas jurisdiction, is still considered eligible to apply for the TRS.

\(^5\) Excluding staff members who are receiving income from paid appointments outside the university proper or who is supported by external research grants.
Research Grants Council

Theme-based Research Scheme 2021/22 (Eleventh Round)

Implementation Timetable

<table>
<thead>
<tr>
<th>Timing (tentative)</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>31 July 2020</td>
<td>• The Research Grants Council (RGC) invites preliminary proposals from universities</td>
</tr>
<tr>
<td>29 September 2020 (5:00 pm)</td>
<td>• Deadline for universities to submit preliminary proposals to the RGC</td>
</tr>
<tr>
<td>October – December 2020</td>
<td>• Review of preliminary proposals by Selection Panel</td>
</tr>
<tr>
<td>mid December 2020</td>
<td>• The RGC to finalise the shortlist</td>
</tr>
<tr>
<td>late December 2020</td>
<td>• Universities to be informed of shortlisted proposals and invited to submit full proposals</td>
</tr>
<tr>
<td>late February 2021</td>
<td>• Deadline for universities to submit full proposals</td>
</tr>
<tr>
<td>early March – April 2021</td>
<td>• Peer review of full proposals by external reviewers</td>
</tr>
<tr>
<td>late April / early May 2021</td>
<td>• Responses from project teams to the assessments by external reviewers</td>
</tr>
<tr>
<td>May 2021</td>
<td>• Assessment of full proposals by Selection Panel</td>
</tr>
<tr>
<td>mid - late May 2021</td>
<td>• Universities to be informed of the project teams invited for interview</td>
</tr>
<tr>
<td>June 2021</td>
<td>• Selection Panel to conduct interviews and evaluate full proposals, and the RGC to make funding decisions on the recommendation of the Selection Panel</td>
</tr>
<tr>
<td>July 2021</td>
<td>• The RGC to announce funding results</td>
</tr>
</tbody>
</table>