UTeM RESEARCH POLICY

VERSION 2014
(Endorsement : University Senat 27 February 2014)

Prepared by

The Centre for Research and Innovation Management, UTeM

TERMINOLOGY

UTeM	Universiti Teknikal Malaysia Melaka
VC	Vice Chancellor
DVCRI	Deputy Vice Chancellor (Research and Innovation)
R&D	Research and Development
UHSB	UTeM Holdings Sdn Bhd.
CoE	Centre of Excellence
TyCoE	Technical Industry Centre of Excellence
RMC	Research Management Centre
CRIM	Centre for Research and Innovation Management
IP	Intellectual Property
URIS	University Research Information System
REEI	Research Excellence Evaluation Instrument
MoU	Memorandum of Understanding
MoA	Memorandum of Agreement
MoE	Ministry of Education
GRA	Graduate Research Assistance

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1.0 INTRODUCTION

The Research and Development (R&D) Policy is an updated version of the Policy and Research Guidelines published in 2006. This new Policy is in line with making UTeM a World Class Focused Technical University based on technical-industrial research. The Policy serves as the basic reference for R&D practices. It is designed primarily for academics, researchers with or without research contracts, administrators, students of research programmes and research collaborators and partners.

2.0 VISION AND MISSION

Vision

To Be One of The World Leading Innovative and Creative Technical Universities

Mission

UTeM is determined to lead and contribute to the well-being of the country and the world by:

- promoting knowledge through innovative teaching & learning, research and technical scholarship;
- developing professional leaders with impeccable moral values ;
- generating sustainable development through smart partnerships with the community and industry.

R&D Theme

Pioneering Future Technology – Strategic Knowledge and Innovation for the future.

R&D Objectives

The strategic R&D objective of UTeM is to lead the development of sustainable solutions and state of the art technology for the future needs of industry and society. The supporting objectives to be achieved by year 2020 are:

- To produce high impact technical-based research and publications;
- To create indigenous industrial-relevant technology;
- To enhance commercialization of innovative products;
- To develop champions in technical niche;
- To develop reputable TyCoEs.

3.0 ECOSYSTEM

R&D ecosystem is a complex interrelationship of stakeholders for the growth and sustainability of R&D in a university. Stakeholders consist of the University top management, academics, researchers, students, Centre of Excellence (CoE), institute, faculties, sponsors, media, public and private agencies as well as the community. Each stakeholder mutually reinforces one another by playing various roles effectively and by coordinating the diverse factors in the R&D value chain.

4.0 THRUSTS

Five (5) thrust components have been identified to ensure the successful implementation of R&D initiatives and achievements. These thrusts are the R&D pillars for the execution of UTeM Strategic Plan (2012-2020), specifically under the theme of "Pioneering Future Technology" by year 2020. The following are the R&D thrusts:

- Thrust 1: Governance
- Thrust 2: Research and Innovation Management
- Thrust 3: Talent Management and Strategic Partnership
- Thrust 4: Achievement and Recognition
- Thrust 5: Research Ethics

4.1 GOVERNANCE

Research governance is empowered to be R&D centric by creating an organised system that will facilitate and intensify research activities. The research governance structure (Senate, Senate Standing committee, Research and Innovation Committee, Journal Committee, CoE Committee, Technical Evaluation Committee on Intellectual Property, and Faculty Research & Postgraduate Committee) is authorized to manage the strategic plans, execution and performance of R&D. All committees (see Appendix 1) consist of appointed and invited members.

4.1.1 Senate

The Senate is responsible for, but not limited to, enacting legislations governing the scholars as well as the teaching, learning, research and innovation activities of the University in accordance with the University Constitution Order 2007, Paragraph 21 (4).

4.1.2 Senate Standing Committee on Research and Innovation

The Senate Standing Committee on Research and Innovation is chaired by the DVCRI. The committee comprises selected Senate members and invited guests, which is responsible for:

a) formulating and reviewing the policies and direction of R&D;
b) reviewing and approving research applications and other relevant matters;
c) monitoring R&D performance.

4.1.3 Research Management Centre

The Centre for Research and Innovation Management (CRIM) is established to manage research and innovation activities as well as to monitor their performance. The Centre is primarily committed in managing the following R&D activities:

a) Assist researchers in securing research grants, especially in meeting the specific procedural requirements.
b) Manage, coordinate and monitor research grants, technical and financial progress reports through URIS.
c) Encourage exploitation, development, patenting and commercialization of research and innovative products.
d) Initiate and maintain liaison with industry, government agencies and other stakeholders for product commercialization.
e) Showcase research products in local and international exhibitions.
f) Promote research culture amongst the academics and students;

4.1.4 Research and Innovation Committee

The Research and Innovation committee is chaired by the Director of CRIM and consists of Managers of CoE and Deputy Deans of Research. This committee is responsible for:

a) monitoring research activities and performance at the faculty/CoE level;
b) reviewing and approving research grants application;
c) inculcating and reinforcing multi-disciplinary research activities.

4.1.5 CoE Committee

The Chairman and members of the CoE Committee are appointed by the VC. The committee comprises all CoE managers and are responsible for:

a) coordinating research groups;
b) monitoring multidisciplinary research activities;
c) evaluating research grant proposals at CoE level.

4.1.6 Journal Committee

The Chairman and members of the Journal Committee are appointed by the DVCRI. The committee comprises Chief Editors and the UTeM registered journal technical staff. The Committee is responsible for:

a) facilitating publication and executing University journals;
b) monitoring University journal performance;
c) gearing-up research publication in international refereed and high impact journals.

4.1.7 Technical Evaluation Committee on Intellectual Property

The Technical Evaluation Committee on Intellectual Property is chaired by the DVCRI. The committee comprises the Director of CRIM, Chief Operating Officer of UHSB, legal advisor of UTeM, a representative from the Intellectual Property organization and representatives from faculties. This committee is responsible for:

a) evaluating the quality and commercial value of research prototypes;
b) suggesting further improvement on the prototypes;
c) approving technical aspects of Intellectual Property applications.

4.1.8 Faculty Research & Postgraduate Committee

The Research and Postgraduate Committee is set up in each faculty/centre and chaired by a Dean. The committee comprises the Deputy Dean (Research and Postgraduate), Head of Departments and other appointed academic staff. This committee is responsible for:

a) evaluating research grant proposals at the CoE / Faculty or Department level;
b) managing and monitoring postgraduate research activities;
c) coordinating research laboratories.

4.2 RESEARCH AND INNOVATION STRATEGY

The R&D culture and activities to support R&D agenda in pioneering future technology are essential to a university. Hence, UTeM through its strategic plans provide direction, human resource support, financial, physical and information resources within an ecosystem conducive to R&D (see Appendix 2).

4.2.1 Strategic Initiatives

UTeM is continuously participating in local and international research exhibitions to promote and market its inventions and products. The strategic aim is to become

technologically well-equipped in order to realise the “Vision 2020”. In promoting excellence in R&D, the following initiatives are outlined:

a) Innovate and invent new technologies through high impact research and strategic university-industry collaborations.
b) Secure and obtain funds from various industries through a collective effort.
c) Reinforce the agenda on University-Industry relationship.

Advanced Manufacturing Technology (AMT) is the primary UTeM niche. AMT involves the design and integration of innovative technologies to create advanced products and processes in manufacturing. AMT is supported by the following four focus areas:

a) Green Technology
b) Emerging Technology
c) System Engineering
d) Human-Technology Interaction

4.2.2 Research Excellence Initiative

CoEs are established to intensify high impact research output. The CoEs shall be technically competent and able to provide total industrial solutions to reflect their high performance index. The index is in accordance with the standard instruments used to measure the relevance of the CoEs for the needs of industry and academics. Upon reaching a certain level, the UTeM CoEs will be certified as the Technical Industry Centre of Excellence (TyCoE^{TM}).

4.3 TALENT MANAGEMENT AND STRATEGIC PARTNERSHIP

UTeM places great emphasis on identifying, grooming and developing world-class R&D talents, particularly in multidisciplinary research activities, strategic collaboration and partnership as well as providing total solutions for industry and community.

4.3.1 Multidisciplinary Research

The multidisciplinary research approach is an indispensable element to the development of excellence in research and innovation. This research approach is one of the important criteria outlined by the MOE and other related ministries to secure research grants. Researchers are encouraged to incorporate soft and hard sciences in order to produce high impact research outcomes, particularly for the benefit of the community and nation. Hence, UTeM executes the following strategies:

a) Empower interdisciplinary projects among research groups of CoEs

b) Enhance inter-discipline, inter-university research collaborations and smart partnership with strategic industries
c) Reinforce R&D capacities and capabilities in terms of human capital and technological infrastructure
d) Establish strategic networking with international research and industrial organizations

4.3.2 Enculturation of Research and Innovation

Enculturation of positive attitudes towards R&D is crucial in developing an ecosystem conducive to research, invention, innovation and technopreneurship. Researchers are encouraged to discover new products that provide solutions to industries and communities. Such a move will enable researchers to penetrate the global market.

Sustaining excellence in research is critical in order to enhance a nation's competitiveness and economic growth. Hence, researchers must be passionate, focused and driven to advance in strategic knowledge and at the same time should have the technological foresight relevant to the needs of the present and future industries. Among the initiatives taken are:

a) Mentoring and coaching between senior and junior researchers.
b) Enhancing research strategic collaboration with other universities and industries.
c) Encouraging publication in high impact and indexed journals.
d) Promoting research and innovation output in local and international established research exhibition events.
e) Developing and executing an effective research management system.
f) Identifying R&D talents and nurturing them to excel at national and international levels.
g) Encouraging niche-driven research in CoEs.

4.3.3 Establishment of Research Group

Research groups, led by a group leader, are registered under the existing CoEs. Their performances are assessed annually using the established Research Excellence Evaluation Instrument (REEI). Any research group which fulfils the REEI requirement can apply to become a CoE.

4.3.4 Sharing of R&D Facilities and Infrastructures

The sharing of R&D facilities and infrastructures is strongly encouraged for maximum utilisation. Research groups and CoEs are expected to establish research

laboratories that can cater to the needs of multidisciplinary research and relevant industries.

4.3.5 Strategic Partnership

The strategic University Partnership will encompass collaborative efforts among UTeM researchers, other universities and industries. The collaboration and partnership shall be governed by an appropriate legal framework and documentation. Any IP developed from the synergy must be in accordance with the IP guidelines and UTeM policy.

4.4 ACHIEVEMENT AND RECOGNITION

4.4.1 Output

Among others, UTeM recognises the tangible research output as an indicator of research excellence:

a) Successful supervision of research students which contribute to the Human Capital Development agenda;
b) Articles in any citation-indexed journals, technical and non-technical publication;
c) Monograph, books and chapters in books by established publishers.
d) Successful registration of IP;
e) Product awards in national and international competitions;
f) Successful commercialization of research products;
g) Accreditation and awards from research based activities;
h) Secured research grants;
i) Joint research collaborations via MoU and MoA ;

4.4.2 Recognition.

Among others, UTeM recognises the following as tangible scholarly achievements:,

a) Appointment of an editor on the editorial board of journals, proceedings or a member on the board of national and/or international professional institutions
b) Appointment of a fellow, a panel committee member in academic or professional bodies at national and/or international level
c) Appointment of an invited and/or keynote speaker.

4.5 RESEARCH ETHICS

An outstanding mark in research is the commitment of researchers to ethical standards in research and knowledge generation. All researches are subject to ethical considerations concerning objectives, methods, data use and ownership, funding agencies, publication and intellectual property (IP).

A researcher is responsible for his/her actions in research as well as his/her responses to the actions of other researchers. This applies to every aspect of research, including applying for grants, experimenting of design, generating and data analysing, including publishing of results and any aspect related to IP.

4.5.1 Responsibilities

(i) Accountability

Researchers are accountable to the University, staff, students, society and grant providers. Researchers shall declare and manage any financial or professional conflict of interest. Areas of conflict of interests include:

a. Researchers have an existing or potential financial interest in the outcome of the research
b. Researchers are likely to gain a private or private practice benefit that is significantly dependent on the research outcome
c. Researchers' professional or personal gain arising from the research outcome may be more than usual / normal in a specific research undertaking
d. Researchers are responsible to avoid any plagiarism activity related to research proposal in research grant application and research publication.

(ii) Integrity

Researchers shall uphold research integrity at all times. Researchers shall acknowledge the direct and indirect contributions of colleagues, research collaborators, grant providers and others in their work and publications at all times. Research integrity includes maintaining rigor, carefulness and accountability: the recognized standards of good scholarship. All researchers should practise the following conducts:

a. Emphasize high quality research;
b. Undertake appropriate research supervision;
c. Maintain accurate and detailed research activity records and results;
d. Be ethical about the objectives of one's research;
e. Cooperate with one's fellow researchers and others;
f. Publish, develop and commercialize their respective research findings.

(iii) Honesty

Researchers have an obligation to achieve and maintain the highest standards of intellectual honesty in the conduct of the research. Researchers shall foster an environment which promotes intellectual accountability and honesty in ensuring that the research they undertake is consistent with the respective research guidelines and adheres to the defined original proposal, particularly on the financial aspects.

(iv) Openness

Apart from protecting research interests and rights, researchers should share their research output and related knowledge with other researchers and the public. However, researchers should be careful in discussing their work in public forums, especially work that has not been peer- reviewed or unpublished. Researchers are guaranteed certain freedom and should accept corresponding responsibilities.

(v) Knowledge Enhancement

Researchers should always be motivated to undergo relevant training to ensure knowledge improvement and engagement in producing high quality research. Graduate Research Assistant (GRA) and project members should be given the opportunities to attend relevant training/courses as part of their career development. A dynamic research culture should be fostered where all researchers develop their knowledge and skills as well as exchange ideas freely within a climate of mutual trust and cooperation.

(vi) Leadership and Supervision

Principal and senior researchers are responsible for the supervision of the whole research process, including project design, funding applications, experimental design or research protocols, data recording, data analysis and publication and dissemination of results. The senior researchers are also responsible for the appointment of qualified GRA as well as the supervision of the research.

(vii) Referring to the Policy and Guidelines

Researchers are bound by the respective research and innovation policies and guidelines and legal requirements which regulate their work, particularly health and safety requirements, environmental standards, and privacy and protection of research data. Specifically, researchers are bound to uphold key general principles for the care, use and humane treatment of animals in scientific research and to obtain the prior consent of human subjects.

(viii) Responsibility and Ownership of Research Assets

All research assets are belongs to UTeM. Researchers are responsible for all assets procured under research funding, and to adhere to the research agreement of the grants, or otherwise stated.

(ix) Curriculum Vitae

A biographical sketch incorporated into a grant proposal or a curriculum vitae used in an application for a fellowship or any other position should follow the University standards of accuracy. *Inflated* or otherwise inaccurate listings of educational background or academic status with an intent to deceive, including degrees, employment history and professional accomplishments are just as reprehensible as irresponsible entries in a list of publications and in some cases could be considered as falsification and be categorized as misconduct.

4.5.2 Ethics in Research Involving Human Subject

Research that involve human subjects must align with research ethics guideline of the National and International Ethical Guidelines for Research Involving Human Subjects. The guidelines are as follow:

a) Researchers conducting research related to materials or sources of research such as the harvesting of human beings or animals in the collection of data/ information must obtain a written approval from the University Research Committee;
b) University Research Committee shall first examine the 'merit' applications from researchers conducting research that involve the collection of data from sources such as human beings or animals;
c) Once satisfied with the justification for the application, the University Research Committee shall issue a formal letter of approval in writing to the National Ethical Committee.
d) Once approved, a copy of the approval letter has to be submitted to participants/respondents who are involved in the research.

4.5.3 Ethics in Data Survey

a) Data survey shall not violate established professional ethics pertaining to personal rights and privacy of human beings, health, safety and infliction of injury or pain on animals and environment.

b) Research projects or surveys involving human (including questionnaires and interviews) must have a balance between the needs for research and human dignity.

c) All research must follow the approved framework, and questionnaires are subjected to the review and approval of the University Research Ethic Committee.

d) These questionnaires must be approved in advance by the committee to determine whether the risks posed on the subjects are acceptable and whether the information describing the risks and benefits of the participation of the subject is conveyed to the subjects in an accurate and intelligible manner.

4.5.4 University Obligation of Intellectual Property

a) The University provides a protection in the creation, development, generation and commercialisation of any Intellectual properties (IP). This is important in ensuring that there is no breach of ethics or guidelines established by the University in relation to the moral rights of the inventors, creators or originators of IP, data storage and confidentiality, the attribution of credit, ethical and safe conduct of research, particularly with humans and other animals and environment, plagiarism, and falsification of data.

b) The University recognises and certifies the rights and responsibilities of the inventors, creators or originators of IP. It shall take whatever necessary measures and reasonable steps to ensure that the inventor, creator or originator is acknowledged as the authorized author or inventor of the IP.

c) The University shall also take whatever measures and steps deem necessary to ensure that any modifications or alterations of a work does not cause any harm which can affect the reputation or honour of the inventor, creator or originator.

4.5.5 Ethics in Publication

a) Any publication must give appropriate credit to all authors for their roles in the research. If more than one person contributes significantly, the decision of which names are to be listed as co-authors should reflect the relative contributions of various participants in the research. The use of alternative

forms of acknowledgment within the paper for contributions that does not merit co-authorship, for example technical assistance, is permissible.

b) Appropriate citation must be made. The work of others should be cited or credited, whether published, unpublished, in a written form, an oral presentation or material on a website. Each journal or publisher may specify the particular form of appropriate citation. One does not need to provide citations except in the case of well-established concepts found in common textbooks or in the case of phrases which describe a commonly-used methodology. Special rules have been developed for citing electronic information.

c) An author should not divide a research paper which is a self-contained integral whole into a number of smaller papers merely for the sake of expanding the number of items in the author's bibliography.

d) In citing one's own unpublished work, an author must be careful not to imply an unwarranted status for the manuscript.

   i. A paper should not be listed as submitted, in anticipation of expected submission.

   ii. A paper should not be listed as accepted for publication or in press unless the author has received proof or page proof or received a letter from an editor or publisher stating that publication has been approved, subject perhaps only to copy-editing.

e) Members of a research group who contribute to work that is later incorporated into a proposal or protocol are entitled to be consulted and informed as to what their role will be if the proposal is funded or the protocol approved. A charge of plagiarism in the proposal or protocol on grounds that such members are not later included as part of the team that conducts the approved or funded research, however, can usually not be sustained. Such researchers who are excluded from subsequent research are entitled, however, to be considered for co-authorship in publications if their contributions merit it.

4.5.6 Misconduct In Research

Research misconduct is defined as fabrication, falsification, or plagiarism, including misrepresentation of credentials, in proposing, performing, or reviewing research, or in reporting research results. It does not include genuine errors or differences of opinion. Misconduct as defined above is viewed as a serious professional deviation that is subject to sanctions imposed both by the University and by external agency.

It is important that risks in carrying out research are clearly articulated and weighed against the potential value of it so that those involved (researchers and subject) proceed with informed consent. Regardless of the nature of their work, researchers are obliged to take into account the wider direct and indirect anticipated consequences of their work. Researchers are urged to avoid the following misconduct:

a) Data fabrication which is dishonesty in reporting results such as proclamation of non-existent study results;
b) Data falsification which include the altering of the existing records;
c) Plagiarism which includes the direct copying of textual and graphics materials, and using other individual's data as well as idea without his/her authorisation;
d) Failure to spend research funds in a way consistent with the goals stated in the relevant contract documents and/or failure to maintain clear and proper records of expenditures;
e) Failure to acknowledge the source of biological materials used in laboratory;
f) Failure to protect the rights of informants regarding their privacy and to protect the research subjects anonymity and the confidentiality of information resources;
g) Violation of properties like stealing or destroying property of others, such as research papers, supplies, equipment or products of research;
h) Dishonesty in publication like misleading ascription of authorship including the listing of authors without their permission, attributing work to others who have not in fact contributed to the research, and the lack of appropriate acknowledgment of work produced by others involved in the research.
i) Any misconduct in research and publication shall be managed by the Management of the University according to the prescribed rules and regulations.

4.5.7 Safety And Health

a) The University Occupational, Safety and Health Department is responsible for advising the University on health and safety policies, ensuring all faculties/departments are in compliance with policies, statutes, and regulations, monitoring the effectiveness of the safety programs, and providing central health and safety services to all areas of the University in accordance with the Occupational, Safety and Health Act 1994.
b) The University shall make all reasonable efforts to:
    i) Protect the health and safety of the University staff, students and research associates;

ii) Provide safe workplaces for staff and students;

iii) Provide information to staff and students about health and safety hazards;

iv) Identify and correct health and safety hazards and encourage staff and students to report any hazards;

v) Provide information and protection for those on campuses and in the surrounding community regarding environmental hazards arising from operations at the University.

REFERENCES

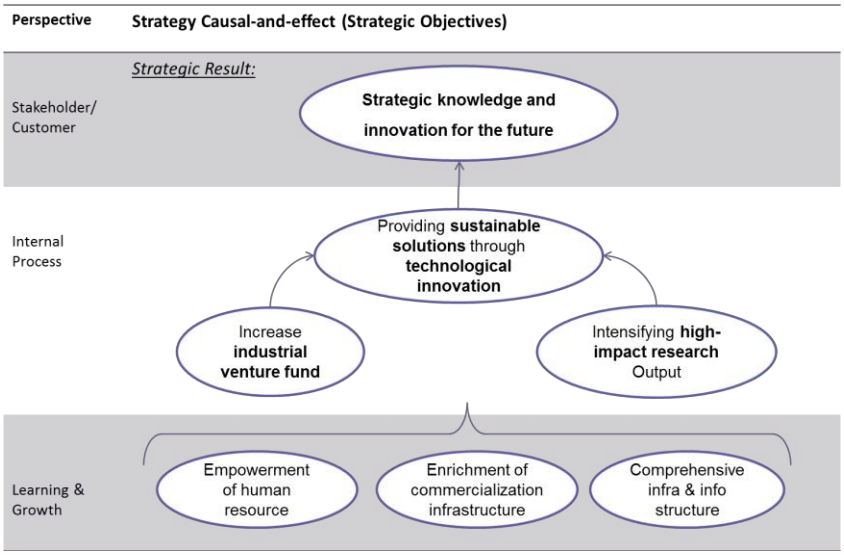
This research and innovation policy has been proposed with references to the following organisations:

a. Intellectual Property Commercialisation Policy for Research and Development Project funded by The Government of Malaysia (MOSTI)
b. Institute for Competitiveness & Prosperity, Ontario, Canada
c. Occupational, Safety and Health Act 1994
d. Stanford University, USA
e. Universiti Malaysia Sarawak
f. Universiti Putra Malaysia
g. Universiti Sains Malaysia
h. University of Queensland, Australia
i. University of Technology Sydney, Australia

Appendix 1

RESEARCH AND INNOVATION GOVERNANCE STRUCTURE

Appendix 2



A STRATEGY MAP FOR RESEARCH AND INNOVATION