



# **College of Engineering**

**2016 – 2020 Strategic Plan**

**Five-Year Implementation Plan**

## Contents

Check List .....	<b>Error! Bookmark not defined.</b>
Domain 4.1: Undergraduate Teaching and Learning.....	2
Domain 4.2: Postgraduate Teaching and Learning.....	47
Domain 4.3: Research.....	64
Domain 4.4: Creativity and Innovation .....	88
Domain 4.5: Community Engagement .....	110

## College of Engineering

### Domain 4.1: Undergraduate Teaching and Learning

**Strategic Goal: To produce quality graduates equipped with critical thinking and professional skills to enable them to pursue successful careers**

#### Strategies considered by the College of Engineering

Component	Strategies	Brief Comment
Focus of the academic programme	A. Expand science, liberal arts and professional programmes in response to the needs of the labour market and stakeholders.	No expansion plan in the engineering programmes during 2016-2020 since no feedback from stakeholders indicates the need. However, periodic probes of stakeholders will be conducted over the next five years.
	B. Initiate interdisciplinary programmes and expand multidisciplinary	Conduct a review of Mechatronics and Agricultural Engineering Programmes.  The new Biomedical Engineering track is in the process of approval by SQU. The plan over the next 5 years is to monitor its potential to become a full programme by 2020 and jointly run by ECE, MIE, and College of Medicine.
Dimension and orientation	C. Align enrolment growth to existing and future labour market needs.	It is recommended that actions table for this strategy to be developed at the University level in consultation with the College.
	D. Introduce elite tracks and nurture high performing students through competitive, merit-based selection.	Elite tracks will be identified in the 2016-2020 Strategic Plan. If viable tracks are identified, implementation will take place in the second 5 year strategic plan (i.e., 2021-2025)
Teaching methodology	E. Integrate outcome-based teaching in the programmes.	This is partly practised as part of the ABET accreditation requirements.

	F. Enrich curricula with active learning techniques and student-centred activities.	A college committee has already been established to implement the initiatives for the two F and G strategies.
	G. Enhance e-learning in undergraduate academic programmes.	
Teaching evaluation	H. Implement continuous assessment of teaching.	A committee will be established to look at this issue
Learning evaluation	I. Adopt outcome-based assessment.	This is currently practised as part of the ABET accreditation requirements.
Programme quality assurance	J. Ensure programmes comply with national accreditation standards and best practice.	No official standards for programmes accreditation have been developed by OAAA, yet.
	K. Achieve international accreditation of all professional programmes.	Programmes are currently accredited by ABET.

**Unit: College of Engineering**

**2016–2020 Strategic Plan**

**Domain 4.1: Undergraduate Teaching and Learning**

<b>Strategy A: Expand science, liberal arts and professional programmes in response to the needs of the labour market and stakeholders.</b>						
<b>Initiative 1: Review academic programmes to identify the degree of response to market needs</b>						
<b>#</b>	<b>Action</b>	<b>Responsibility</b>	<b>Time frame</b>	<b>Performance indicator and target</b>	<b>Resources</b>	<b>Risks</b>
1	Organize meeting(s) with Industrial Advisory Boards (IABs) (at the college/programme level) to review the academic programmes	Dean, HoDs	Every 2 years starting Fall 2016	Report on the market needs	Faculty time  Allocate budget to cover lunch/refreshments for meetings	No risk; IABs are already established for the engineering programmes as per ABET accreditation requirements.
2	Conduct surveys with industry	Assistant Dean for Training and Community Service	Every 2 years starting Fall 2016	A report analyzing the survey results	Allocate an administrator to follow up with surveys	Low response  <b>Impact:</b> Require a long time period to collect reliable data.  <b>Mitigation:</b> Allocate an Administrator to follow up with surveys.

**Unit: College of Engineering**

**2016–2020 Strategic Plan**

**Domain 4.1: Undergraduate Teaching and Learning**

<b>Strategy A: Expand science, liberal arts and professional programmes in response to the needs of the labour market and stakeholders.</b>						
<b>Initiative 2: Survey market needs to identify disciplinary programmes</b>						
<b>#</b>	<b>Action</b>	<b>Responsibility</b>	<b>Time frame</b>	<b>Performance indicator and target</b>	<b>Resources</b>	<b>Risks</b>
1	Conduct a survey to identify market needs for new disciplinary programmes	HoD	Fall 2017-Spring 2018	Number of responses from stakeholders	Faculty time and 100 OMR	Low number of responses  Continuous follow-up

**Unit: College of Engineering**

**2016–2020 Strategic Plan**

**Domain 4.1: Undergraduate Teaching and Learning**

<b>Strategy A: Expand science, liberal arts and professional programmes in response to the needs of the labour market and stakeholders.</b>						
<b>Initiative 3: Introduce additional disciplinary programmes to meet market needs.</b>						
<b>#</b>	<b>Action</b>	<b>Responsibility</b>	<b>Time frame</b>	<b>Performance indicator and target</b>	<b>Resources</b>	<b>Risks</b>
1	<p><b>No action on Initiative 2 in 2016-2020 since this period will be used to implement Initiative 1 (see the above action table).</b></p> <p><i>Comment: This initiative may be implemented in the second 5 year plan (2021-2025)</i></p>					

**Unit: College of Engineering**

**2016–2020 Strategic Plan**

**Domain 4.1: Undergraduate Teaching and Learning**

<b>Strategy B: Initiate interdisciplinary programmes and expand multidisciplinary.</b>						
<b>Initiative 1: Review multidisciplinary programmes currently implemented.</b>						
<b>#</b>	<b>Action</b>	<b>Responsibility</b>	<b>Time frame</b>	<b>Performance indicator and target</b>	<b>Resources</b>	<b>Risks</b>
1	Form a college level committee to review the existing multidisciplinary programmes: e.g. Mechatronics, Biomedical Engineering track and Agricultural Engineering.	Assistant Dean for Undergraduate Studies	Fall 2016	Establishment of Committee		–
2	Review Mechatronics, Agricultural Engineering programmes and Biomedical Engineering track to satisfy the market and stakeholders need and international trends.	Committee (Action 1)	Starting from Fall 2018	Review reports on Mechatronics, Agricultural Engineering and Biomedical Engineering track	Faculty time	Additional load on faculty.  <b>Impact:</b> Poor reviews.  <b>Mitigation:</b> Reduce the administrative load of the committee members.



**Unit: College of Engineering**

**2016–2020 Strategic Plan**

<b>Strategy B: Initiate interdisciplinary programmes and expand multidisciplinary</b>						
<b>Initiative 2: Identify interdisciplinary programmes and expand multidisciplinary programmes that meet the needs of the local market and international trends.</b>						
<b>#</b>	<b>Action</b>	<b>Responsibility</b>	<b>Time frame</b>	<b>Performance indicator and target</b>	<b>Resources</b>	<b>Risks</b>
1	Form a college level committee to review the existing multidisciplinary programmes and identify interdisciplinary programmes: e.g. Mechatronics, Biomedical Engineering track and Agricultural Engineering.	Assistant Dean for Undergraduate Studies	Fall 2016	Establishment of Committee		–
2	Review Mechatronics, Agricultural Engineering programmes and Biomedical Engineering track and identify interdisciplinary programmes: to satisfy the market and stakeholders need and international trends.	Committee (Action 1)	Starting from Fall 2018	Review reports on Mechatronics, Agricultural Engineering and Biomedical and identifications of new interdisciplinary programmes Engineering track.	Faculty time	Additional load on faculty.  <b>Impact:</b> Poor reviews.  <b>Mitigation:</b> Reduce the administrative load of the committee members.

## Domain 4.1: Undergraduate Teaching and Learning

<b>Strategy B: Initiate interdisciplinary programmes and expand multidisciplinary</b>						
<b>Initiative 3: Develop team-taught courses across disciplines as a prelude to introducing interdisciplinary programmes</b>						
<b>#</b>	<b>Action</b>	<b>Responsibility</b>	<b>Time frame</b>	<b>Performance indicator and target</b>	<b>Resources</b>	<b>Risks</b>
1	Review and identify interdisciplinary team-taught Courses across disciplines (e.g. renewable energy, sustainable buildings) based on feedback from stakeholders.	Assistant Dean for Undergraduate Studies, College Curriculum Committee	Fall 2018-Spring 2019	Identification of team-taught courses	Faculty time	Additional load on faculty.  <b>Impact:</b> Poor reviews.  <b>Mitigation:</b> Reduce the administrative load of the members of the College Curriculum Committee members.
2	Develop Interdisciplinary team-taught courses across disciplines (e.g. renewable energy, sustainable buildings).	Assistant Dean for Undergraduate Studies, HoDs	Fall 2019-Spring 2020	Number of developed courses across disciplines  Target: 4	Faculty time	Effective coordination among faculty members.  <b>Impact:</b> Poor course delivery.  <b>Mitigation:</b> develop two pilot courses.
3	Offer Interdisciplinary team-taught courses across disciplines.	Assistant Dean for Undergraduate Studies, HoDs	next five year plan	Number of offered courses	Faculty time	Availability of resources.  <b>Impact:</b> Poor delivery

				Target: 2		of interdisciplinary team-taught course.  <b>Mitigation:</b> Implement two pilot courses in the first phase.
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**Unit: College of Engineering**

**2016–2020 Strategic Plan**

**Domain 4.1: Undergraduate Teaching and Learning**

<b>Strategy B: Initiate interdisciplinary programmes and expand multidisciplinary programmes in line with stakeholders’ needs and international trends</b>						
<b>Initiative 4: Establish departments/units to operate multidisciplinary programmes and interdisciplinary programmes</b>						
<b>#</b>	<b>Action</b>	<b>Responsibility</b>	<b>Time frame</b>	<b>Performance indicator and target</b>	<b>Resources</b>	<b>Risks</b>
1	Establish departments/units for the existing and new multidisciplinary programmes.	Assistant Dean for Undergraduate Studies, Steering Committees	Fall 2018-Spring 2019	A review report	Faculty time	<p>Availability of resources.</p> <p>Additional load on faculty.</p> <p><b>Impact:</b> Poor reviews.</p> <p><b>Mitigation:</b> Reduce the administrative load of the members of the Steering Committee.</p>

**Unit: College of Engineering**

**2016–2020 Strategic Plan**

**Domain 4.1: Undergraduate Teaching and Learning**

<b>Strategy C: Align enrolment growth to existing and future labour market needs.</b>						
<b>Initiative 1: Identify existing and projected manpower needs.</b>						
<b>#</b>	<b>Action</b>	<b>Responsibility</b>	<b>Time frame</b>	<b>Performance indicator and target</b>	<b>Resources</b>	<b>Risks</b>
1	Form a committee.	It is recommended that this action is carried out at the University level in coordination with the College Dean.	Spring 2016	Forming the committee		–
2	Carry out a study to identify current and future manpower needs in consultation with Industrial Advisory Board, Ministry of Manpower, etc.	The new formed committee (at the University level)	Fall 2017- Spring 2018	Report on the projected manpower needs		Degree of accuracy of the statistics on future increases in the number of engineering student intake is important.

<b>Strategy C: Align enrolment growth to existing and future labour market needs.</b>						
<b>Initiative 2: Determine the size of the total intake and its distribution among existing and newly established programmes.</b>						
<b>#</b>	<b>Action</b>	<b>Responsibility</b>	<b>Time frame</b>	<b>Performance indicator and target</b>	<b>Resources</b>	<b>Risks</b>
1	Implement the recommendations of initiative 1 strategy C aligned with the College resources.	Assistant Dean for Undergraduate Studies  (it is recommended that this initiative is implemented at the university level)	Fall 2018 onwards	Size of the intake and new distribution of the students among programmes	Additional resources: human, infrastructure, financial, equipment, etc...	Accuracy of the statistics about future increase in the number of engineering student intake.  Lack of resources.  <b>Impact:</b> employability problem for various programme graduates  Low quality graduates  <b>Mitigation:</b> Implement gradually any changes in student intakes.

**Unit: College of Engineering**

**2016–2020 Strategic Plan**

**Domain 4.1: Undergraduate Teaching and Learning**

<b>Strategy D: Introduce elite tracks and nurture high performing students through competitive, merit-based selection</b>						
<b>Initiative 1: Decide in which programmes elite tracks would be desirable.</b>						
<b>#</b>	<b>Action</b>	<b>Responsibility</b>	<b>Time frame</b>	<b>Performance indicator and target</b>	<b>Resources</b>	<b>Risks</b>
1	Form a Committee at the college level to study the need for elite tracks.	Dean	Fall 2018	Decision on elite tracks	Faculty member time	–

<b>Strategy D: Introduce elite tracks and nurture high performing students through competitive, merit-based selection</b>						
<b>Initiative 2: Determine the feasibility and formulate the structure of such elite tracks.</b>						
<b>#</b>	<b>Action</b>	<b>Responsibility</b>	<b>Time frame</b>	<b>Performance indicator and target</b>	<b>Resources</b>	<b>Risks</b>
1	Action will depend on the outcomes of D1 and will be tackled in the next five year plan.					

**Strategy D: Introduce elite tracks and nurture high performing students through competitive, merit-based selection**

**Initiative 3: Establish the conditions for entry into the elite tracks.**

#	Action	Responsibility	Time frame	Performance indicator and target	Resources	Risks
1	Action will depend on the outcomes of D1 and will be tackled in the next five year plan.					



**Unit: College of Engineering**

**2016–2020 Strategic Plan**

**Domain 4.1: Undergraduate Teaching and Learning**

<b>Strategy E: Integrate outcome-based teaching in the programmes.</b>						
<b>Initiative 1: Review general graduate attributes as well as programme-specific ones with input from stakeholders.</b>						
<b>#</b>	<b>Action</b>	<b>Responsibility</b>	<b>Time frame</b>	<b>Performance indicator and target</b>	<b>Resources</b>	<b>Risks</b>
1	Review student outcomes (SOs) for each programme.	Accreditation Committees	Fall 2016	List of Revised SO's	Faculty time	Lack of familiarity with accreditation practices.  Additional load on faculty.  Impact: Poor reviews. Low productivity in research and community services.  Mitigation: Organize workshops, seminars, conferences, etc...
2	Review student outcomes (SOs) for each programme during Industrial Advisory Board (IAB) meeting, identify any	Accreditation Committees	Spring 2017	List of revised/new SOs	Faculty time	Lack of familiarity with accreditation practices  Additional load on faculty.  Impact: Poor reviews.

	<p>modifications/ additions needed in light of local and regional industry requirements.</p>					<p>Low productivity in research and community services.</p> <p>Mitigation: Organize workshops, seminars, conferences, etc...</p> <p>Reduce the administrative load of the committee members.</p>
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**Strategy E: Integrate outcome-based teaching in the programmes.**

**Initiative: 2. Align programme goals and outcomes with the graduate attributes.**

#	Action	Responsibility	Time frame	Performance indicator and target	Resources	Risks
1	Review programme educational objectives (PEOs) for each programme.	Programme Accreditation Committees	Every 5 years, starting Fall 2018	Revised PEOs	Faculty time	<p>Lack of familiarity with accreditation practices</p> <p>Additional load on faculty members.</p> <p><b>Impact:</b> Poor reviews. Low productivity in research and community services.</p> <p><b>Mitigation:</b> Organize workshops, seminars, conferences, etc...</p> <p>Reduce the administrative load of the committee members.</p>
2	Map SOs against PEOs for each programme.	Accreditation Committees	At the end of each PEO-review cycle	Mapping table		<p>Lack of familiarity with accreditation practices</p> <p>Additional load on faculty.</p>

						<p><b>Impact:</b> Poor reviews. Low productivity in research and community services.</p> <p><b>Mitigation:</b> Organize workshops, seminars, conferences, etc...</p> <p>Reduce the administrative load of the committee members.</p>
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**Strategy E: Integrate outcome-based teaching in the programmes.**

**Initiative 3: Develop and map course learning outcomes to programme outcomes.**

#	Action	Responsibility	Time frame	Performance indicator and target	Resources	Risks
1	<b>Align course outcomes with SOs</b>	Programme Accreditation Committee	Continuous process, starting Fall 2016	Revised course outlines	Faculty time	<p>Lack of familiarity with accreditation practices</p> <p>Additional load on faculty.</p> <p><b>Impact:</b> Poor reviews. Low productivity in research and community services.</p> <p><b>Mitigation:</b> Organize workshops, seminars, conferences, etc.</p> <p>Reduce the administrative load of the committee members.</p>
2	<b>Map SOs to different courses</b>	Programme Accreditation Committee	Fall 2017- Spring 2018	Mapping table	Faculty time	<p>Lack of familiarity with accreditation practices</p> <p>Additional load on faculty</p> <p><b>Impact:</b> Poor reviews. Low productivity in research and community</p>

						<p>services</p> <p><b>Mitigation:</b> Organize workshops, seminars, conferences, etc...</p> <p>Reduce the administrative load of the committee members.</p>
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**Unit: College of Engineering**

**2016–2020 Strategic Plan**

**Domain 4.1: Undergraduate Teaching and Learning**

<b>Strategy F: Enrich curricula with active learning techniques and student-centered activities.</b>						
<b>Initiative 1: Identify best-practice active learning techniques for courses.</b>						
<b>#</b>	<b>Action</b>	<b>Responsibility</b>	<b>Time frame</b>	<b>Performance indicator and target</b>	<b>Resources</b>	<b>Risks</b>
1	Request the College Instructional Development Committee (CIDC) to survey and identify active learning techniques suitable for engineering programmes.	Dean	Fall 2016	Active learning techniques identified.	Faculty time and Budget	–

<b>Strategy F: Enrich curricula with active learning techniques and student-centred activities.</b>						
<b>Initiative 2: Determine the appropriate active learning techniques at course level.</b>						
<b>#</b>	<b>Action</b>	<b>Responsibility</b>	<b>Time frame</b>	<b>Performance indicator and target</b>	<b>Resources</b>	<b>Risks</b>
1	Organize workshops for faculty on active learning techniques	College Instructional Development Committee (CIDC)	Yearly Starting Fall 2016	<b>PI:</b> Number of workshops <b>Target:</b> 5	Budget allocation for conducting workshops if expertise not available at SQU	Low participation in workshops due to  Lack of motivation to adopt a new teaching technique  <b>Impact:</b> Low number of trained faculty  <b>Mitigation:</b> Include in the annual staff appraisal.
2	Identify courses suitable for active learning in a given engineering programme.	CIDC	Every spring semester starting Fall 2017	<b>PI:</b> Number of courses identified <b>Target:</b> 25% of core courses at end of each spring semester	Faculty time	Additional load on faculty  <b>Impact:</b> Poor reviews. Low productivity in research and community services  <b>Mitigation:</b> Reduce the administrative load of the committee members.
3	Identify suitable techniques for active learning for courses.	CIDC	Every spring	<b>PI:</b> Number of	Faculty time	Additional load on faculty



			semester starting Spring 2016	techniques identified <b>Target: 5</b>		<p><b>Impact:</b> Poor reviews. Low productivity in research and community services.</p> <p><b>Mitigation:</b> Organize workshops, seminars, conferences, etc...</p> <p>Reduce the administrative load of the committee members.</p>
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**Strategy F: Enrich curricula with active learning techniques and student-centred activities.**

**Initiative 3: Design ways to encourage the use of active learning techniques to achieve learning outcomes.**

#	Action	Responsibility	Time frame	Performance indicator and target	Resources	Risks
1	Review course outline template to include a section on “Learning Methodologies”.	Curriculum Committees	Every fall semester starting 2017	<b>PI:</b> Revised course outline  <b>Target:</b> Review of 25% of core course outlines	Faculty time	–
2	Develop guidelines to adopt in implementing student-centered techniques/activities.	New committee	Every fall semester starting Fall 2017	<b>PI:</b> Guideline document  <b>Target:</b>	Faculty time	Additional load on faculty  <b>Impact:</b> Poor reviews. Low productivity in research and community services.  <b>Mitigation:</b> Organize workshops, seminars, conferences, etc...
3	Apply the guidelines to update learning methodologies for selected courses.	HoDs (Department)	Fall2018	<b>PI:</b> Implementation of guidelines	Faculty time New grade for faculty with active learning	1. Complex or cumbersome guidelines 2. Large student to staff

				<p><b>Target:</b> All selected courses</p>	<p>experience</p>	<p>ratio</p> <p>3. Lack of qualified supporting staff</p> <p><b>Impact:</b></p> <ol style="list-style-type: none"> <li>1. Inconsistent application of the guidelines</li> <li>2. Difficulty in implementing in-class active learning activities</li> </ol> <p><b>Mitigation:</b></p> <ol style="list-style-type: none"> <li>1. Pilot the application of the guidelines</li> <li>2. Increase the number of faculty to ensure manageable section sizes (e.g. 25 students per section)</li> </ol>
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**Strategy F: Enrich curricula with active learning techniques and student-centred activities.**

**Initiative 4: Enrich curricula with work experience as part of skills development and degree requirements.**

#	Action	Responsibility	Time frame	Performance indicator and target	Resources	Risks
1	Review contents, placement criteria and follow-up procedures for student training.	Assistant Dean for Training & Community Service (input from the departments)	Summer 2016	<p><b>PI:</b> Employers and students/trainees/interns feedback</p> <p><b>Target:</b> 70% satisfactory response</p>	Faculty time	–
2	Implement the revised contents, placement criteria and follow-up procedures for student training.	Assistant Dean for Training & Community Service	Summer 2018		Budget allocation for placement of students and follow-up of trainees by staff	<p>Lack of commitment from either trainers or trainee.</p> <p><b>Impact:</b> Poor training</p> <p><b>Mitigation:</b> Develop an incentive system for students and consider trainers of proven track record</p>

College of Engineering

2016–2020 Strategic Plan

Domain 4.1: Undergraduate Teaching and Learning

Strategy G: Enhance e-learning in undergraduate academic programmes.						
Initiative 1: Keep abreast of advances in e-learning.						
#	Action	Responsibility	Time frame	Performance indicator and target	Resources	Risks
1	Develop a comparative database of e-learning tools used by a given programme (e.g., MIE, ECE, PCE, CAE) in teaching and learning in the engineering courses and in similar programmes and update the usage of e-learning in courses.	The new committee	Every 3 years starting Fall 2016	<p><b>PI:</b> List of possible e- to adopt for teaching</p> <p><b>Target:</b> identified e-learning tools for senior courses (levels 4 and 5)</p>	Budget allocation for required e-learning tools	<p>E-learning may not be already available at SQU or are expensive to acquire.</p> <p><b>Impact:</b> Delay in the adoption of some e-learning tools for teaching and learning</p> <p><b>Mitigation:</b> College to draw a budget plan for establishing a number of common facilities for distant learning, e.g. Open Educational Resources Unit (OER).</p>

**Strategy G: Enhance e-learning in undergraduate academic programmes.**

**Initiative 2: Adopt, as appropriate, online distance learning.**

#	Action	Responsibility	Time frame	Performance indicator and target	Resources	Risks
1	Develop guidelines (policy, procedure, regulations, and best practices) for distance learning.	University, New committee	Spring 2018	PI: Guidelines document Target: University approval	Faculty time	Guidelines do not consider the local context.  Impact: Distance learning may not be as effective as in-class learning.  Mitigation: Consult with the stakeholders during development of the guidelines.
2	Conduct seminars/workshops for faculty on development of distance/online courses.	University, New committee	Every two years starting Spring 2018 and Fall 2018	PI: Number of seminars/workshops Target: 2	Budget allocation to organize the seminar/workshop if expertise not available in SQU	Low attendance due to lack of motivation by staff  Impact: Delay in the adoption of distance learning

						Mitigation: Organize one workshop in a College's Retreat Day.
3	Implement distance learning for a set of courses [akin to MOOCs].	HoDs	Fall 2018	<b>PI:</b> Students' performance <b>Target:</b> 70% achieving C or better	Budget allocation for technological requirements and support	Variation in quality due to inconsistent application of guidelines.  Availability of IT resources.  Security. <b>Impact:</b> Poor student performance and/or low enrolment.  <b>Mitigation:</b> Pilot before full deployment.
4	Establish Open Educational Resources Unit (OER) in the college	Dean	Fall 2018		IT technical staff	Availability of IT resources.  <b>Impact:</b> Poor IT infrastructure.  <b>Mitigation:</b> Request grade for one IT staff.

**College of Engineering**

**2016–2020 Strategic Plan**

**Domain 4.1: Undergraduate Teaching and Learning**

<b>Strategy H: Implement continuous assessment of teaching.</b>						
<b>Initiative 1: Decide on the participants in the continuous assessment (students, peers and HoDs).</b>						
<b>#</b>	<b>Action</b>	<b>Responsibility</b>	<b>Time frame</b>	<b>Performance indicator and target</b>	<b>Resources</b>	<b>Risks</b>
1	Form a College “Teaching Assessment” committee (similar to the current Curriculum and Accreditation committees) to decide on the participants in the continuous assessment	Dean	Fall 2018	Identification of the participants	Faculty time	–



<b>Strategy H: Implement continuous assessment of teaching.</b>						
<b>Initiative 2: Decide on the frequency of continuous assessment of teaching.</b>						
#	Action	Responsibility	Time frame	Performance indicator and target	Resources	Risks
1	The “Teaching Assessment” committee to decide on the frequency of continuous assessment.	Teaching Assessment Committee Chair	Fall 2018	Decision on frequency of continuous assessment	Faculty time	–

<b>Strategy H: Implement continuous assessment of teaching</b>						
<b>Initiative 3: Specify the type of continuous assessment of teaching and the use of feedback results to enhance the quality of teaching.</b>						
#	Action	Responsibility	Time frame	Performance indicator and target	Resources	Risks
1	The “Teaching Assessment” committee to specify on the type of continuous assessment of teaching.	Teaching Assessment Committee Chair	Fall 2018	Decision on the type of continuous assessment of teaching	Faculty time	–
2	Carry out the continuous assessment in the selected courses of the current offered programmes.	HoDs	Spring 2019	Number of courses where continuous assessment is carried out	Faculty time	

3	The "Teaching Assessment" committee to decide on how to use the feedback results for teaching improvement.	Teaching Assessment Committee Chair	Fall 2019	Teaching improvement	Faculty time	–
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College of Engineering

2016–2020 Strategic Plan

Domain 4.1: Undergraduate Teaching and Learning

Strategy I: Adopt outcome-based assessment.						
Initiative 1: Identify assessment tools for each course (test, practical, lab/project report, homework, presentation and observation).						
#	Action	Responsibility	Time frame	Performance indicator and target	Resources	Risks
1	Identify assessment tools for each course.	Programme Accreditation Committees in each department.	Fall 2016	List of assessment tools identified for each course	Faculty time	<p>Improper selection of assessment tools for certain courses.</p> <p><b>Impact:</b> Lead to under/over-achievement of performance targets.</p> <p><b>Mitigation:</b> A review of the selected tools by course focus groups and Programme Accreditation Committee.</p>

<b>Strategy I: Adopt outcome-based assessment.</b>						
<b>Initiative 2: Develop performance indicators for each learning outcome, that is, specific, measurable statements identifying the required performance(s).</b>						
<b>#</b>	<b>Action</b>	<b>Responsibility</b>	<b>Time frame</b>	<b>Performance indicator and target</b>	<b>Resources</b>	<b>Risks</b>
1	Review performance indicators (PIs) already developed for each Student Outcome (SO).	Programme Accreditation Committees in each department.	Fall 2016 – Spring 2017	List of revised PIs for each SO	Faculty time	<p>Improper selection of PIs for certain courses.</p> <p>Additional load on faculty</p> <p><b>Impact:</b> Lead to under/over-achievement of performance targets.</p> <p>Low productivity in research and community services.</p> <p><b>Mitigation:</b> A review of the PIs by course focus groups and Programme Accreditation Committee. Reduce the administrative load of the committee members.</p>

<b>Strategy I: Adopt outcome-based assessment.</b>						
<b>Initiative 3: Develop criteria/standards linked to learning outcomes for each performance indicator.</b>						
<b>#</b>	<b>Action</b>	<b>Responsibility</b>	<b>Time frame</b>	<b>Performance indicator and target</b>	<b>Resources</b>	<b>Risks</b>
1	Review the targets previously set for each student outcome and performance indicator.	Programme Accreditation Committees	Fall 2016 – Spring 2017	Revised targets for each student outcome and performance indicator	Faculty time	<p>Additional load on faculty</p> <p><b>Impact:</b> Poor reviews. Low productivity in research and community services.</p> <p><b>Mitigation:</b> Reduce the administrative load for members for the Programme Accreditation Committees</p>

**College of Engineering**

**2016–2020 Strategic Plan**

**Domain 4.1: Undergraduate Teaching and Learning**

<b>Strategy J: Ensure programmes comply with national accreditation standards and best practices.</b>						
<b>Initiative 1: Cyclically review the foundation programme and entry level proficiency.</b>						
<b>#</b>	<b>Action</b>	<b>Responsibility</b>	<b>Time frame</b>	<b>Performance indicator and target</b>	<b>Resources</b>	<b>Risks</b>
1	Compare average high-school diploma scores against SQU entrance exam scores.	Assistant Dean for Undergraduate Studies, Foundation Programme (FP) Steering Committee/ Admissions and Registration	Every 2-3 years, starting Fall 2016	Difference between - Average high-school scores of entering candidates, and - Average scores in SQU entrance exam	Faculty time	–
2	Compare current Foundation Programme (FP) scores against previous batches.	Assistant Dean for Undergraduate Studies, Foundation Programme (FP) Steering Committee	Every 2-3 years, starting Spring 2016	Average time taken to complete FP for current and previous batches  Average scores upon completion of FP for current and previous batches	Faculty time	If current average time taken to complete FP or average FP scores are lower than previous batches, there may be concern about proficiency

3	Review course contents of the FP.	Assistant Dean for Undergraduate Studies, Foundation Programme (FP) Steering Committee	Every 2-3 years, starting Spring 2016	Revised FP curriculum	Faculty time	
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**Strategy J: Ensure programmes comply with national accreditation standards and best practices.**

**Initiative 2: Cyclically review the educational objectives of programmes to ensure alignment with the university’s mission, relevance and needs through a programme advisory board.**

#	Action	Responsibility	Time frame	Performance indicator and target	Resources	Risks
1	Review the educational objectives of programmes.	Programme HoDs	Every three years starting from Fall 2016	Revised programmes educational objectives	Faculty time	<p>Additional load on faculty</p> <p><b>Impact:</b> Poor reviews. Low faculty productivity in research and community services.</p> <p><b>Mitigation:</b> Reduce the administrative load for the members for the Programme Accreditation Committees.</p>



**Strategy J: Ensure programmes comply with national accreditation standards and best practice.**

**Initiative 3: Review graduate attributes based on the National Qualifications Framework, generic competencies and best international practice.**

#	Action	Responsibility	Time frame	Performance indicator and target	Resources	Risks
1	Review of student outcomes (SOs) and performance indicators (PIs).	Course focus groups, and Programme Accreditation Committees	Fall 2016-Spring2017	Revised SOs and PIs	Faculty time	<p>Additional load on faculty</p> <p><b>Impact:</b> Poor reviews. Low faculty productivity in research and community services.</p> <p><b>Mitigation:</b> Reduce the administrative load for the members for the Programme Accreditation Committees.</p>
2	Review of degree plan and course contents.	Course focus groups, and Programme Accreditation Committees	Fall 2016-Spring 2017 Fall 2018-Spring 2019	Revised degree plan Revised course data sheets	Faculty time	<p>Additional load on faculty</p> <p><b>Impact:</b> Poor reviews. Low faculty productivity in research and community services.</p>

						<b>Mitigation:</b> Reduce the administrative load for members for the Programme Accreditation Committees.
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**Strategy J: Ensure programmes comply with national accreditation standards and best practice.**

**Initiative: 4 Design curricula to develop graduate attributes.**

#	Action	Responsibility	Time frame	Performance indicator and target	Resources	Risks
1	Review and update curricula to develop graduate attributes.	College Accreditation Committee (CAC) and Programme Accreditation Committees	Ongoing	Revised curricula	Faculty time	<p>Additional load on faculty.</p> <p><b>Impact:</b> Low faculty productivity in research and community services.</p> <p><b>Mitigation:</b> Reduce the administrative load for the members for the Programme Accreditation Committees.</p>

**Strategy J: Ensure programmes comply with national accreditation standards and best practice.**

**Initiative: 5 Adopt international conventions and initiatives in higher education.**

#	Action	Responsibility	Time frame	Performance indicator and target	Resources	Risks
1	Prepare and execute for next round of ABET accreditation.	College Accreditation Committee (CAC) and Programme Accreditation Committees	Fall 2016-Spring 2019	New course files New self-study reports (SSR)	Faculty time	<p>Additional load on faculty.</p> <p><b>Impact:</b> Low faculty productivity in research and community services.</p> <p><b>Mitigation:</b> Reduce the administrative load for the members for the Programme Accreditation Committees.</p>

College of Engineering

2016–2020 Strategic Plan

Domain 4.1: Undergraduate Teaching and Learning

<b>Strategy K: Achieve international accreditation of all professional programmes</b>						
<b>Initiative 1: Identify appropriate international bodies for the professional programmes which are recognized by OAAA.</b>						
<b>#</b>	<b>Action</b>	<b>Responsibility</b>	<b>Time frame</b>	<b>Performance indicator and target</b>	<b>Resources</b>	<b>Risks</b>
1	Continue with ABET as the accreditation body for all the programmes in the CoE.	College Accreditation Committee (CAC)	Fall 2016	College Board decision to prepare for the next ABET accreditation	Faculty time	<p>Additional load on faculty.</p> <p><b>Impact:</b> Low faculty productivity in research and community services.</p> <p><b>Mitigation:</b> Reduce the administrative load for the members for the Programme Accreditation Committees.</p>

**Strategy K: Achieve international accreditation of all professional programmes.**

**Initiative 2: Ensure that the programmes comply with requirements/standards of the accrediting body.**

#	Action	Responsibility	Time frame	Performance indicator and target	Resources	Risks
1	Prepare and execute for next round of ABET accreditation.	Programme Accreditation Committees, College Accreditation Committee	Fall 2016 - Spring 2019	Course files Self-Study Report (SSR) Other supporting documents	Faculty time	<p>Additional load on faculty.</p> <p><b>Impact:</b> Low faculty productivity in research and community services.</p> <p><b>Mitigation:</b> Reduce the administrative load for members for the Programme Accreditation Committees. Consider monetary compensation for responsible individual/s is needed for good ABET preparation combined with good academic and research performance.</p>

**Strategy K: Achieve international accreditation of all professional programmes.**

**Initiative 3: Seek accreditation from the identified international bodies.**

#	Action	Responsibility	Time frame	Performance indicator and target	Resources	Risks
1	Apply for ABET accreditation.	Dean, CoE	Spring 2019	ABET application		–
2	Compile and edit self-study report (SSR).	Programme Accreditation Committees, College Accreditation Committee	Fall 2016- Spring 2019	Final Self-Study Report (SSR)	Faculty time	<p>Additional load on faculty.</p> <p><b>Impact:</b> Poor reviews. Low faculty productivity in research and community services.</p> <p><b>Mitigation:</b> Reduce the administrative load for the members for the Programme Accreditation Committees.</p>

## College of Engineering

### Domain 4.2: Postgraduate Teaching and Learning

#### Domain 4.2: Postgraduate Teaching and Learning

<b>Strategy (A): Diversify and increase the postgraduate student body</b>						
<b>Initiative 1: Attract application from the local public and private sectors.</b>						
<b>#</b>	<b>Action</b>	<b>Responsibility</b>	<b>Time Frame</b>	<b>Performance indicator and target</b>	<b>Resources</b>	<b>Risks</b>
1	Coordinate with local and private sectors to determine their needs for postgraduate programmes	ADPSR	2016-2018	Increase in the number of applicants	Human and Financial resources	Risk:: Competition with local and overseas institutions of higher education  Mitigation: review the programmes to match the local needs and enhance the quality
2	Regularity advertise postgraduate programmes in local media	ADPSR	every semester starting spring 2016	Increase in number of advertisements	Financial resources  Human resources	-



<b>Strategy (A): Diversify and increase the postgraduate student body</b>						
<b>Initiative 2: Strike a balance between undergraduate and postgraduate student population.</b>						
<b>#</b>	<b>Action</b>	<b>Responsibility</b>	<b>Time Frame</b>	<b>Performance indicator and target</b>	<b>Resources</b>	<b>Risks</b>
1	Study the trend in region and international institutions of higher education and develop a strategy to strike a balance	Deputy Vice Chancellor for Postgraduate Studies and Research (DVCPSR)	2016-2020	Target:  Developed strategy to strike a balance between undergraduate and postgraduate student population	Financial	–

<b>Strategy (A): Diversify and increase the postgraduate student body.</b>						
<b>Initiative 3: Establish a unit for international students under the Deanship of Postgraduate Studies.</b>						
<b>#</b>	<b>Action</b>	<b>Responsibility</b>	<b>Timeframe</b>	<b>Performance indicator and target</b>	<b>Resources</b>	<b>Risks</b>
1	Establish a unit for international students	DPS	2016	Establishment of the unit for international students	Human and financial	-
2	Develop policies for the unit	DPS, Quality Assurance office, DVCPSR	2016-2017	Policies for the established unit	Human resources	-

<b>Strategy (A): Diversify and increase the postgraduate student body</b>						
<b>Initiative 4: Provide competitive scholarships for postgraduate students.</b>						
<b>#</b>	<b>Action</b>	<b>Responsibility</b>	<b>Time Frame</b>	<b>Performance indicator and target</b>	<b>Resources</b>	<b>Risks</b>
1	Increase masters and doctoral stipends to internationally competitive levels	Deputy Vice Chancellor for Postgraduate Studies and Research (DVCPSR)	2016-2018	Target: 200% increase in stipends	Financial	Risk: Limited financial resources Impact: Limitations in increase of high standard postgraduate students Mitigation: Give more priority to postgraduate studies
2	Increase number of masters and doctoral scholarships	Deputy Vice Chancellor for Postgraduate Studies and Research (DVCPSR)	2016-2018	Increase in number of scholarships offered Target: Minimum of 5 MSc and 3 PhD scholarships per department per year	Financial, faculty, and facilities	Risk: Limited budget, faculty, facilities, support Impact: No increase in postgraduate scholarships Mitigation: Approach industries, Ministry of Higher Education and other international institutions to secure scholarships

3	Review and improve admission policies (in DPS Academic Regulations)	Deanship of Postgraduate studies (DPS), Quality Assurance office	2016 (once every 5 years)	Policies and practices reviewed, benchmarked and approved	Human resources	-
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**Strategy (A): Diversify and increase the postgraduate student body**

**Initiative 5: Market postgraduate programmes nationally and internationally**

#	Action	Responsibility	Timeframe	Performance indicator and target	Resources	Risks
1	Publicize postgraduate programs locally to ministries, industries, alumni and institutions of higher education.	DPS/Colleges	Annually starting from 2016	Number of advertisement/visits to public and private sectors	Financial and human resources	-
2	Publicize postgraduate programs internationally	DPS/Colleges	Annually starting from 2016	Number of international advertisements	Financial, Faculty time Financial and human resources	-

<b>Strategy (B): Diversify and increase postgraduate programmes.</b>						
<b>Initiative 1: Provide a framework for multidisciplinary and interdisciplinary programmes.</b>						
#	Action	Responsibility	Timeframe	Performance indicator and Target	Resources	Risks
1	Develop a policy framework to introduce new or review old multidisciplinary and interdisciplinary programmes which are aligned with SQU vision and mission	DPS	2017-2018	Policy document	human and financial resources	–

<b>Strategy (B): Diversify and increase postgraduate programmes.</b>						
<b>Initiative 2: Review regulations to accommodate a diversity of programmes.</b>						
#	Action	Responsibility	Timeframe	Performance indicator and Target	Resources	Risks
1	Review postgraduate regulations	DPS	Once in 5 years starting 2016	Revised regulations	Human resources	

<b>Strategy (B): Diversify and increase postgraduate programmes.</b>						
<b>Initiative 3: Provide appropriate infrastructure and resources to support the expansion and diversification of postgraduate programmes.</b>						
<b>#</b>	<b>Action</b>	<b>Responsibility</b>	<b>Timeframe</b>	<b>Performance indicator and Target</b>	<b>Resources</b>	<b>Risks</b>
<b>1</b>	Identify required infrastructure and resources for expansion	Dean	2016-2018	Quantified infrastructure and resources requirement for each program	Faculty time	-
<b>2</b>	Secure funds for infrastructure and resources	Dean	2019-2020	Funds secured	Financial and human resources	Risk: Limited or no funds available Impact: Not able to expand and diversify postgraduate due to the limited or no budget Mitigation Advertise for importance of PG programs and get funds from external agencies other than SQU
<b>3</b>	Establishment/modification of new/existing infrastructure (labs, equipment, software etc.) and resources	HoDs	Annually	Modification or establishment of new infrastructures	Financial	Risk: Limited availability of space and budget Impact: Not able to expand and diversify PG programs due to the limited existing infrastructure and resources

						Mitigation: Encourage the university give priority to postgraduate studies. Consider free open source software to establish labs.
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<b>Strategy (B):</b> Diversify and increase postgraduate programmes.						
<b>Initiative 4:</b> Introduce postgraduate programmes that address socio-economic needs s.						
#	Action	Responsibility	Timeframe	Performance indicator and Target	Resources	Risks
1	Identify required infrastructure and resources for expansion	Dean	2016-2018	Quantified infrastructure and resources requirement for each program	Faculty time	-
2	Secure funds for infrastructure and resources	Dean	2019-2020	Funds secured	Financial and human resources	Risk: Limited or no funds available Impact: Not able to expand and diversify postgraduate due to the limited or no budget Mitigation Advertise for importance of PG programs and get funds from external agencies other than SQU

3	Establishment/modification of new/existing infrastructure (labs, equipment, software etc.) and resources	HoDs	Annually	Modification or establishment of new infrastructures	Financial	<p>Risk: Limited availability of space and budget</p> <p>Impact: Not able to expand and diversify PG programs due to the limited existing infrastructure and resources</p> <p>Mitigation: Encourage the university give priority to postgraduate studies. Consider free open source software to establish labs.</p>
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<b>Strategy (B):</b> Diversify and increase postgraduate programmes.						
<b>Initiative 5:</b> Introduce joint postgraduate programmes with well-established international universities.						
#	Action	Responsibility	Timeframe	Performance indicator and Target	Resources	Risks
1	Review the existing framework for badging programmes	DPS	2016	framework for badging programmes is reviewed	Human resources	=
2	Identify and communicate with potential	ADPSR and HoDs	2018-2019	Number of institutions identified	Human resources	- Risk

	institutions for cooperation					Time spent without fruitful outcomes  Mitigations Careful choice
3	Develop joint programs	ADPSR, DPS, Partner University	Next five year plan			
4	Publicize and offer the new programs	ADPSR, DPS, Partner University	Next five year plan			



<b>Strategy [C]: Consolidate learner-centered and outcome-based programmes</b>						
<b>Initiative 1: Adopt learner-centred and outcome-based education in postgraduate programmes.</b>						
<b>#</b>	<b>Action</b>	<b>Responsibility</b>	<b>Timeframe</b>	<b>Performance indicator and Target</b>	<b>Resources</b>	<b>Risks</b>
1	Develop expected students' outcomes for postgraduate programmes based on international best practices	ADPSR	Starting 2017	Students' outcomes	Faculty time	-
2	Review postgraduate programmes to incorporate the developed students' outcomes	ADPSR	2018	Revised postgraduate programmes	Faculty time	-
3	Implement the revised postgraduate programmes with a focus on a learner-centered approach	HoDs	2019	Number of running postgraduate programmes	Faculty time and financial resources	Not sufficient resources  <b>Impact</b> Poor quality programmes  <b>Mitigations:</b> Reduced number of programmes offered. Seek external funding



<b>Strategy [C]: Consolidate learner-centered and outcome-based programmes</b>						
<b>Initiative 2: Update curricula and syllabi to accommodate student-centered and outcome-based learning</b>						
<b>#</b>	<b>Action</b>	<b>Responsibility</b>	<b>Timeframe</b>	<b>Performance indicator and Target</b>	<b>Resources</b>	<b>Risks</b>
1	Review and update the curricula to accommodate student-centered and outcome-based learning	Faculty, HoD	Starting 2019	Revised curricula	Faculty time	-

<b>Strategy [C]: Consolidate learner-centered and outcome-based programmes.</b>						
<b>Initiative: 3 Update learning methodologies to suit the new curricula and the increased proportion of learning-by-research</b>						
<b>#</b>	<b>Action</b>	<b>Responsibility</b>	<b>Timeframe</b>	<b>Performance indicator and Target</b>	<b>Resources</b>	<b>Risks</b>
1	Review the current learning methodologies used in postgraduate education in SQU and beyond	New Committee/College	2018	Review report	Faculty time	-
2	Introduce new learning methodologies and research informed teaching if applicable to suit the new curricula	New Committee/Department/College	2019	Number of learning methodologies introduced	Financial, faculty time	-

<b>Strategy [C]: Consolidate learner-centered and outcome-based programmes.</b>						
<b>Initiative 4: Improve assessment procedure to reflect learning-by-research orientation</b>						
<b>#</b>	<b>Action</b>	<b>Responsibility</b>	<b>Timeframe</b>	<b>Performance indicator and Target</b>	<b>Resources</b>	<b>Risks</b>
1	Identify currently used assessment procedures	Department/Faculty,	Next five year plan			
2	Develop and implement assessment procedure	Department/Faculty	Next five year plan			
3	Evaluate the assessment procedure	Department/Faculty	Next five year plan			

<b>Strategy [C]: Consolidate learner-centered and outcome-based programmes.</b>						
<b>Initiative 5: Align undergraduate and postgraduate programmes to ensure continuity and consistency.</b>						
<b>#</b>	<b>Action</b>	<b>Responsibility</b>	<b>Timeframe</b>	<b>Performance indicator and Target</b>	<b>Resources</b>	<b>Risks</b>
1	Align final year undergraduate courses with postgraduate programs	Department/College	2018	Number of revisions	Faculty time	Risk: Poor alignment of courses Impact: Students will not benefit from the alignment of courses Mitigation Get feedback from students

<b>Strategy [D]: Promote e-learning in postgraduate academic activities.</b>						
<b>Initiative 1:. Invest in technology-based learning to promote accessibility by offering ‘anytime and anywhere’ delivery.</b>						
<b>#</b>	<b>Action</b>	<b>Responsibility</b>	<b>Timeframe</b>	<b>Performance indicator and Target</b>	<b>Resources</b>	<b>Risks</b>
1	Review e-learning technologies worldwide and select suitable ones for SQU	New Committee (College)	2017	Identified e-learning technologies	Faculty time	-
2	Implement selected e-learning infrastructure and resources	New Committee /CIS/CET	2018	Number of e-learning technology tools	Human and financial resources	Lack of expertise and resources

<b>Strategy [D]: Promote e-learning in postgraduate academic activities</b>						
<b>Initiative 2: Encourage distance-learning and the effective use of courses and seminars made available by international universities.</b>						
<b>#</b>	<b>Action</b>	<b>Responsibility</b>	<b>Timeframe</b>	<b>Performance indicator and Target</b>	<b>Resources</b>	<b>Risks</b>
2	Offer postgraduate courses through distance learning	HoD/CIS/CET	2020	Number of postgraduate courses offered through distance learning	Human and financial resources	Poor quality and accessibility Mitigation  Need to have a clear policy and reliable infrastructure
3	Evaluate and improve the implementation of distance learning courses	HoDs/ADPSR	ongoing	Improvement in the postgraduate programmes	Faculty time	-

1	Identify and utilize suitable available online courses and seminars made available by international universities	HoD/DPS	2018	Number of courses adopted from international institutions	Human and financial resources	Lack of SQU policy Mitigation SQU to develop clear guidelines and make resources available for distance learning
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<b>Strategy [D]: Promote e-learning in postgraduate academic activities.</b>						
<b>Initiative 3: Establish links with international networks of research and education in order to facilitate peer collaboration through remote access to data and equipment.</b>						
#	Action	Responsibility	Timeframe	Performance indicator and Target	Resources	Risks
1	Establish an Open Educational Resources (OER) Unit at SQU	DVCAACS/ DVCPSR/ DVCAFA	2016	Unit established	Financial and human resources	Risk: No resources/no approval  Impact: No established unit  Mitigation: start with allocating tasks of similar unit within sections at University units.

<b>Strategy (E): Expand quality assurance and accreditation processes in line with international standards.</b>						
<b>Initiative 1: Put in place self-evaluation procedures and feedback mechanisms.</b>						
<b>#</b>	<b>Action</b>	<b>Responsibility</b>	<b>Timeframe</b>	<b>Performance indicator and Target</b>	<b>Resources</b>	<b>Risks</b>
1	Develop self-evaluation and improvement process for all postgraduate programs.	ADPSR/HoDs	2019	Self- evaluation and improvement processes established	Faculty time	Faculty overload, Impact: Not able to develop an evaluation and improvement processes in time Mitigation Reduce faculty load and offer incentives.

<b>Strategy(E): Expand quality assurance and accreditation processes in line with international standards.</b>						
<b>Initiative 2: Develop comprehensive and systematic assessment for postgraduate programmes.</b>						
<b>#</b>	<b>Action</b>	<b>Responsibility</b>	<b>Timeframe</b>	<b>Performance indicator and Target</b>	<b>Resources</b>	<b>Risks</b>
1	Develop systematic assessment process for all postgraduate programs.	ADPSR/HoDs	2018	Assessment processes established	Faculty time	Risk: Faculty overload, Impact: Not able to develop assessment process in time Mitigation Reduce faculty load and offer incentives.

<b>Strategy (E): Expand quality assurance and accreditation processes in line with international standards.</b>						
<b>Initiative 3: Benchmark postgraduate programmes to international standards.</b>						
<b>#</b>	<b>Action</b>	<b>Responsibility</b>	<b>Timeframe</b>	<b>Performance indicator and Target</b>	<b>Resources</b>	<b>Risks</b>
1	Develop metrics based on international standards and use them for benchmarking	ADPSR/DPS	2019	Metrics developed and used for benchmarking	Faculty time	Risk: Faculty overload, Impact: Not able to develop assessment process in time Mitigation Reduce faculty load and offer incentives.

<b>Strategy (E): Expand quality assurance and accreditation processes in line with international standards.</b>						
<b>Initiative 4: Seek international accreditation for postgraduate programmes</b>						
<b>#</b>	<b>Action</b>	<b>Responsibility</b>	<b>Time Frame</b>	<b>Performance indicator and Target</b>	<b>Resources</b>	<b>Risks</b>
1	Identify international bodies for accreditation	Dean	2018	International accrediting bodies identified	Faculty time	-
2	Prepare and apply for accreditation	Dean	Next five years plan	Application for accreditation	Financial and human resources	Risk: Faculty overload Impact: Not able to develop assessment process in time Mitigation Reduce faculty load and offer incentives



## College of Engineering

### Domain 4.3: Research

#### Domain 4.3: Research

<b>Strategy A: Enhance research capacity and promote conducive research culture.</b>						
<b>Initiative 1: Provide more research training opportunities to build a research cadre of international caliber.</b>						
#	Action	Responsibility	Time Frame	Performance indicator and Target	Resources	Risks
1	Organize workshops by senior Faculty on writing research proposals, reports, training in equipment, software, emerging techniques	HoD, ADPSR, DPS	2016-2020	<b>PI:</b> Number of research workshops/training  <b>Target:</b> At least once a year	Financial and human resources	<b>Risk:</b> Limited budget availability <b>Impact:</b> Workshops will not be organized <b>Mitigation:</b> Secure resources from other source <b>Risk:</b> No interest from faculty <b>Impact:</b> Low turnout in workshops <b>Mitigation:</b> Give incentives
2	Send staff to international events/workshops for training	HoD, ADPSR, DoR, DVCPSR	2017-2020	<b>PI:</b> Number of staff sent <b>Target:</b> At least one/year/department	Financial resources	<b>Risk:</b> Limited annual training budget <b>Impact:</b> Staff will not be sent for training <b>Mitigation:</b> secure other resources

**Strategy A: Enhance research capacity and promote conducive research culture.**

**Initiative 2:** Expand support for research activities in terms of funding, facilities and equipment.

#	Action	Responsibility	Time Frame	Performance indicator and Target	Resources	Risks
1	Boost funds for Internal Grants/HM grants/UAE-SQU joint research fund	/DVCPSR/AD PSR	2017-2020	<b>PI:</b> Increase in allocated budget <b>Target:</b> Double the budget within four years	Financial resources	<b>Risk:</b> No increase in the allocated fund <b>Impact:</b> Insignificant enhancement in research capacity and culture <b>Mitigation:</b> Review of budget spending and its impact on promised project outcomes. <b>Risk:</b> Inefficient spending of funds <b>Impact:</b> No increase in the allocated fund <b>Mitigation:</b> Review of budget spending and its impact on promised project outcomes.
2	Use internal research grants to provide seed money to attract external research contracts (to be discussed further)		2017-2020	<b>PI:</b> Number of IRGs transformed to externally funded projects <b>Target:</b> Two per years	Human Resources	-

<b>Strategy A: Enhance research capacity and promote conducive research culture.</b>						
<b>Initiative 3: Propagate and disseminate research culture attitudes, norms and values.</b>						
<b>#</b>	<b>Action</b>	<b>Responsibility</b>	<b>Time Frame</b>	<b>Performance indicator and Target</b>	<b>Resources</b>	<b>Risks</b>
1	Provide online update on research activities and publications of College of Engineering	HoD, ADPSR	2016-2020	<b>PI:</b> updated research profile and publications <b>Target:</b> annual	WEB Master and Faculty time	<b>Risk:</b> Lack of support from staff <b>Impact:</b> Low impact on research culture, SQU ranking <b>Mitigation:</b> Reward active staff
2	Organize research activities and events	ADPSR, HoDs	2016-2020	<b>PI:</b> Number of activities and events <b>Target:</b> two per year	Financial and human resources	<b>Risk:</b> Low attendance <b>Impact:</b> Low impact on research culture <b>Mitigation:</b> Establish incentive system

<b>Strategy B: Expand applied research to address socio-economic needs.</b>						
<b>Initiative 1:</b> Identify and develop the strengths of SQU in line with national and regional research priorities.						
#	Action	Responsibility	Time Frame	Performance Indicator and Target	Resources	Risks
1	Identify the research areas of national and regional interest	DVCPSR/ADP SR	2017	<b>PI:</b> List of research areas according to priority <b>Target:</b> Top three research areas	Human resources	-
2	Align research focus to the identified research areas	DVCPSR/ADP SR	2018-2020	<b>PI</b> Number of projects aligned in these areas	Faculty time	-

<b>Strategy B: Expand applied research to address socio-economic needs.</b>						
<b>Initiative 2: Prioritise research funding to address socio-economic needs</b>						
#	Action	Responsibility	Time Frame	Performance Indicator and Target	Resources	Risks
1	Give priority to the identified socio-economic research areas to address socio-economic needs	DVCPSR/ ADPSR	2018-2020	<b>PI:</b> Number of funded projects <b>Target:</b> One project/year	<b>Financial Resources</b>	<b>Risk:</b> Non-competitive project proposals <b>Impact:</b> Failure to attract funds <b>Mitigation:</b> Strict review of proposals internally

<b>Strategy B: Expand applied research to address socio-economic needs.</b>						
<b>Initiative 4:</b> Engage in applied research, innovation and commercialization in areas relevant to Oman.						
#	Action	Responsibility	Time Frame	Performance Indicator and Target	Resources	Risks
1	Study to identify the potential for college research strengths, in terms of capacity and capability, towards innovation	ADPSR/HoDs	2016-2017	College's research potential towards innovation	Faculty time	-
2	<p>Liaise (Interact) with industries/industrial estates of Oman (e.g. PDO, PEIE, IIC, Al-Rusayl Industrial Estate) to apply new knowledge to solve industry problems in range of sectors including renewable energy, EOR, manufacturing, minerals and materials, information /communication, health and life sciences, environmental protection and learning technologies, etc.</p> <p><b>or</b></p> <p>Focus on applied research, development, innovation and commercialization activities with strategic relevance and importance to small and medium size enterprises (SMEs) of Oman</p>	ADPSR/HoDs	2016-2020	<p>Number of projects</p> <p>Number of potential incremental or new innovative products/processes</p>	Human and financial resources	<p><b>Risk:</b></p> <p>Low level of incremental or new innovative products/processes</p> <p>Low level of collaborations with local industries</p> <p><b>Impact:</b></p> <p>Research carried out without any tangible benefits to society</p> <p><b>Mitigation:</b></p> <p>Revisit the strategy to improve collaborations with industry in solving problems leading to innovation / commercialization</p>

3	<p>Put concerted efforts to strengthen college's research infrastructure to have state-of-the-art facilities, equipment and space to support the development of new products and applications</p> <p style="text-align: center;"><b>or</b></p> <p>Progressively increase the college's research capacity and capability to undertake applied research leading to innovation / commercialization</p>	Dean/ADPSR/ HoDs	2016-2020	Enhanced research infrastructure in the college	Human and financial resources	<p><b>Risk:</b> Restricted space and budget</p> <p><b>Impact:</b> Delay in having facilities and equipment to support development of new products</p> <p><b>Mitigation:</b> Use college and department share funds to top budget</p>
4	Develop a strategy to nurture sustained commitment to a culture of innovation	Dean/ADPSR/ HoDs	2016-2017	Strategy developed		-

<b>Strategy B: Expand applied research to address socio-economic needs.</b>						
<b>Initiative 5:</b> Target external research funding opportunities at both national and international levels.						
#	Action	Responsibility	Time Frame	Performance Indicator and Target	Resources	Risks <sup>b</sup>
1	Publicize research funding opportunities at national, regional and international levels to faculty members	DVCPSR/ADP SR	2016-2020	<b>PI:</b> research funding opportunities publicized <b>Target:</b> Web page Commissioned by end of 2016 and updated every six months	Human resources	<b>Risk:</b> Funding opportunities are not adequately publicized <b>Impact:</b> Failure to get funds <b>Mitigation:</b> Publicize regularly.
2	Encourage faculty members to write proposals	HoDs/ADPSR	2016-2020			-



<b>Strategy B: Expand applied research to address socio-economic needs.</b>						
<b>Initiative 6:</b> Use SQU's capability to transfer knowledge to local organisations.						
#	Action	Responsibility	Time Frame	Performance Indicator and Target	Resources	Risks <sup>b</sup>
1	Coordinate with OSE and/or local professional chapters to establish <b>Ideas Exchange Forum</b> with local public and private sectors	ADICTS	Starting from 2016	Number of forums held	Human and financial resources	-
2	Provide a leadership role to private and public sectors in Oman that supports local development / innovation agendas in areas engineering and technology	Dean/ADPSR/ HoDs	2017-2020		Human and financial resources	-

<b>Strategy C: Promote multidisciplinary research.</b>						
<b>Initiative 1:</b> Expand support for strategic research programmes which are of national, regional and industrial importance, such as energy, biotechnology, nano-science and technology, genetics, environment, enhanced oil recovery and food security.						
<b>#</b>	<b>Action</b>	<b>Responsibility</b>	<b>Time Frame</b>	<b>Performance indicator and Target</b>	<b>Resources</b>	<b>Risks</b>
1	Establish research groups to put joint efforts in targeted research areas.	/DVCPSR/ADPSR	2017-2020	<b>PI:</b> Number of research groups established <b>Target:</b> At least 2 research group in the first cycle	Faculty time,	<b>Risk:</b> Not be able to form a research group <b>Impact:</b> Delay in conducting research in areas of national and regional importance <b>Mitigation:</b> provide incentive
2	Provide fund for established research groups	DVCPSR/ADPSR	2018-2020	<b>PI</b> Allocated fund	Financial resources	<b>Risk</b> No or insufficient fund allocated <b>Impact</b> Limited multidisciplinary research works <b>Mitigation</b> Seek external fund
3	Attract research contracts and grants	Research groups	2019-2020	<b>PI</b> Number of contracts/grants <b>Target</b> 1 project per research group	Faculty time	<b>Risk</b> No proposals/grants <b>Impact</b> Delay in multidisciplinary research work <b>Mitigation</b> Incentives based on secured projects

4	Start Grand Challenge Initiatives (GCI)”	ADPSR	2017 onwards	<b>PI:</b> Number of GCI Identified, <b>Target:</b> One GCI per five year plan to start next fine year plan	Financial and human resources	<b>Risk:</b> Lack of support from possible external partners. <b>Impact:</b> Delay in initiation of GCI <b>Mitigation:</b> Efforts should be made to complete the one GCI proposal and secure research fund for it in order to lead by example
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<b>Strategy C: Promote multidisciplinary research.</b>						
<b>Initiative 2:</b> Expand internally funded multidisciplinary research as a strategy to attract external research grants.						
#	Action	Responsibility	Time Frame	Performance indicator and Target	Resources	Risks
1	Increase multidisciplinary research projects using Internal Research Grants	ADPSR/HoDs	Start submission from 2016	<b>PI:</b> Number of projects per year <b>Target:</b> At least one project per year	Human Resources	<b>Risk:</b> No inter-department projects initiated <b>Impact:</b> Delay in provide seed for interdisciplinary research <b>Mitigation:</b> Department Boards to deliberate and come up with suggestions to promote it.
2	Promote inter-departmental/College research cooperation by discussing proposals in mutually organized research workshops	ADPSR/HoDs	2017-2020	Number of workshops mutually arranged	Human Resources	<b>Risk:</b> No workshops organized <b>Impact:</b> No cooperation achieved <b>Mitigation:</b> ADPSR to circulate list of projects among other colleges/departments for promotion

<b>Strategy C: Promote multidisciplinary research.</b>						
<b>Initiative 3:</b> Expand effective partnerships within the university (inter-college, college-centre, inter-department) and with leading international institutions to develop sustainable research.						
#	Action	Responsibility	Time Frame	Performance indicator and Target	Resources	Risks
1	Initiate a prominent inter-college, college-centre, inter-department multidisciplinary seminar program during regular semesters	ADPSR/	2016	<b>PI:</b> Number of seminars conducted <b>Target:</b> One seminar per year per group	Human resources	–
2	Increase inter-department research projects using Internal Research Grant starting from 2016	ADPSR/ HoDs	Start submission from 2016	<b>PI:</b> Number of projects per year <b>Target:</b> At least one project per year	Human Resources	<b>Risk:</b> No inter-department projects initiated <b>Impact:</b> Delay in provide seed for interdisciplinary research <b>Mitigation:</b> Department Boards to discuss and come up with suggestions to promote.
3	Establish a virtual “CAED/ECED/MIED/PCED Collaboratory Portal” for quick and easy response to research requests and opportunities	ADPSR and Chair Publication Committee	2016-2017	<b>PI:</b> Collaboratory portal developed <b>Target:</b> One	Programmer and computing resources	<b>Risk:</b> Difficulty in accessing the portal, yearly maintenance and update <b>Impact:</b> Difficulty in coordinating multidisciplinary research activities <b>Mitigation:</b> Maintain an in-house intranet based portal

**Strategy D: Develop an adaptable research management system**

**Initiative 1:** Introduce a progressively decentralized research management mechanism.

#	Action	Responsibility	Time Frame	Performance indicator and Target	Resources	Risks
1	Give autonomy to Colleges in handling financial matters, procurement, etc.	Deans/ DVCs/VC	2016- 2017	<b>PI:</b> Developed autonomous system <b>Target:</b> Each college should have an autonomous system	Human resources	<b>Risk:</b> Rejection of proposed framework by University Administration <b>Impact:</b> Delay in research activities due to the centralized system <b>Mitigation:</b> Start the autonomous system in steps rather as one complete system
2	Develop an administrative framework to assist researchers in paper work, procurement, and financial matters at the college level	ADPSR/ College Administration	2017- 2018	<b>PI:</b> Approved document on framework/procedure <b>Target:</b> To complete it by 2018	Human resources	<b>Risk:</b> Resistance from administration <b>Impact:</b> Continue to live with same difficulties which hinders/delays research work

<b>Strategy D: Develop an adaptable research management system</b>						
<b>Initiative 2:</b> Facilitate the registration and protection of intellectual property at regional and international level.						
#	Action	Responsibility	Time Frame	Performance indicator and Target	Resources	Risks
1	Review and develop mechanisms for patenting innovative research.	DoR, DVCPSR	2016-2020	Mechanism developed	Faculty time	-
2	Coordinate with local authorities concerned	DVCPSR	2016	Links established	Human resources	-

<b>Strategy E: Develop research partnerships with industry and business.</b>						
<b>Initiative 1:</b> Promote SQU locally as a centre of expertise in areas of research strength.						
#	Action	Responsibility	Timeframe	Performance indicator and target	Resources	Risks
1	Establish a unit of publicity where it announces research capabilities available at SQU with a representative from each college	DVCPSR, DoR, ADPSR	2016-2018	<b>PI/Target:</b> Publicity unit established	Financial and human resources	-

<b>Strategy E: Develop research partnerships with industry and business.</b>						
<b>Initiative 2:</b> Expand collaborative projects that are directed towards solving industrial, social and cultural problems.						
#	Action	Responsibility	Timeframe	Performance indicator and target	Resources	Risks
1	Identify potential areas of collaboration with industry and society,	ADSPR/ IAB	2016 – 2017	<b>PI:</b> Number of identified areas <b>Target:</b> 1 area per department	Human and Financial resources	<b>Risk:</b> Lack of guidance to potential areas of collaboration in societal and cultural aspects <b>Impact:</b> Inability to identify the area of collaboration <b>Mitigation:</b> Conduct visits
3	Develop joint-proposals with identified national and international bodies	Research groups	2018 – 2020	<b>PI:</b> Number of joint proposals <b>Target:</b> 1 proposals per research group	Human and Financial resources	-



<b>Strategy E: Develop research partnerships with industry and business.</b>						
<b>Initiative 3: Solicit funds from industry and business.</b>						
<b>#</b>	<b>Action</b>	<b>Responsibility</b>	<b>Timeframe</b>	<b>Performance indicator and target</b>	<b>Resources</b>	<b>Risks</b>
<b>1</b>	Identify organizations and establishments in both business and industry sectors that potentially may benefit from R&D that can be done in joint research partnerships with college/department. Identifying potential research areas is inclusive.	College/Department: PSR + Industrial outreach committees	2016	<b>PI:</b> Number of identified organizations / establishments  <b>Target:</b> 3 per department	Financial and human resources	-
<b>2</b>	Identify research groups in the college/department that are capable of tackling potential research problems.	College/Department: PSR + Industrial outreach committees	2017	<b>PI:</b> Number of identified research groups  <b>Target:</b> 1 research group per department	Human resources	-
<b>3</b>	Facilitate and submit research proposals made by identified research groups to identified organizations and establishments	College/Department: PSR + Industrial outreach committees + Identified research groups	2018 – 2020	<b>PI:</b> Number of funded research projects from business and industry  <b>Target:</b> 2 funded projects per department per year	Financial and human resources	<b>Risk:</b> A mismatch between scope of work in proposals and business / industry needs <b>Impact:</b> Proposals are not approved <b>Mitigation:</b> Research groups need to comply to outcomes of action 1 above

**Strategy F: Develop collaborative research programmes with national and international research and higher education institutions.**

**Initiative 1: Strengthen strategic research endeavours with national and international universities and research institutes.**

#	Action	Responsibility	Time Frame	Performance indicator and Target	Resources	Risks
1	Identify strategic areas of research for possible collaboration	HoDs / DPSRC	2016 - 2017	<b>PI:</b> identified areas other universities <b>Target:</b> 1 area per department	Human resources	-
2	Identify potential national and international bodies	HoDs / DPSRC	2016 - 2017	<b>PI:</b> Number of identified bodies <b>Target:</b> 1 per area of collaboration	Financial resources	-
3	Develop joint-proposals with identified national and international research institutions	Active research groups	2018 – 2020	<b>PI:</b> Number of proposals <b>Target:</b> 1 join-proposal per area of collaboration	Financial resources	<b>Risk:</b> Lack of interest from either party in the join-proposal <b>Impact:</b> Inability to develop the proposals <b>Mitigation:</b> Provide incentives to SQU researchers Provide benefits to national/international bodies
4	Establish a program for inviting and providing financial support to potential researchers to visit SQU	SQU, College, department	2019-2020	<b>PI:</b> Number of invited researchers <b>Target:</b> 1 invited researcher per year	Financial resources	<b>Risk:</b> Lack of interest to visit SQU <b>Impact:</b> Number of visitors is less than what is expected, or none. <b>Mitigation:</b> Provide attractive financial package for visitors

**Strategy F: Develop collaborative research programmes with national and international research and higher education institutions.**

**Initiative 2:** Solicit funds from national, regional and international funding bodies.

#	Action	Responsibility	Time Frame	Performance indicator and Target	Resources	Risks
1	Identify funding bodies (national, regional, international) that supports programs with a scope that matches college's research themes.	College/Department: PSR + Industrial outreach committees	2017	<b>PI:</b> Number of identified funding bodies  <b>Target:</b> 2 per department	Human resources	-
2	Solicit funds from identified bodies to organize scientific events (e.g. conferences, workshops, forums) <i>or in terms of research contracts</i>	College/Department: Industrial outreach committees	2018 – 2020	<b>PI:</b> Number of organized events Number of contract research  <b>Target:</b> 1 per department per year <i>1 per department per year</i>	Human resources (officers to follow up, paper work, events organization)	-

<b>Strategy G: Promote innovative research outcomes.</b>						
<b>Initiative 1:</b> Continue to encourage research publication in prestigious journals as well as research output of significant local relevance.						
#	Action	Responsibility	Time Frame	Performance indicator and Target	Resources	Risks
1	Specify highly ranked journals in each field	DVCPSR/DoR/ADPSR /HoD	2016	<b>PI:</b> List of journals		-
2	Provide substantial financial incentive for faculty publishing in the prestigious journals	DVCPSR	2017-2020	<b>PI:</b> Number of publications in the highly ranked Journals	Financial resources	-
3	Develop an integrated load model that includes teaching, research and service.	DVCs/VC	2017-2020	<b>PI:</b> Load model developed and implemented <b>Target:</b> 2020.	Human resources and Financial (indirect)	<b>Risk:</b> No agreement on such a model <b>Impact:</b> Low research productivity/publications <b>Mitigation:</b> Give incentives to active researchers to motivate others
4	Develop and implement plans to hire, train, retain and motivate qualified research staff	Dean/ HoDs	2016 onwards	<b>PI:</b> Increased number of qualified research staff <b>Target:</b> Each department to have a minimum of two research staff	Financial resources	<b>Risk:</b> Policies are not developed and current system stays <b>Impact:</b> Difficulty in conducting experimental research <b>Mitigation:</b> Obtain resources through external contracts/grants
5	Develop and implement a system to hire TAs from the	DVCs/Dean/ HoDs	2017-2018	<b>PI:</b> Developed system	Human resources	<b>Risk:</b> Current system stays

	research funds/grants					<b>Impact:</b> Low research productivity/publications
6	Increase the intake of full time postgraduate students	DPS/ADPSR/ HoDs	2016-2020	<b>PI</b> Increase in number of postgraduate students <b>Target</b> Double the intake	Financial and Human resources	<b>Risk</b> No attractive scholarship packages <b>Impact</b> No significant increase in publications <b>Mitigation</b> Seek resources from outside SQU

**Strategy G: Promote innovative research outcomes.**

**Initiative 2:** Recognise, encourage and reward excellence in research and innovation.

#	Action	Responsibility	Timeframe	Performance indicator and target	Resources	Risks
1	Develop and implement a mechanism (policy or procedure) to identify and incentivize creative and innovative projects with concrete outcomes	Dean/ADPSR/HoDs	2016 - 2020	<b>PI:</b> A developed procedure	Financial and human resources	<b>Risk:</b> Lack of financial resources <b>Impact:</b> De-motivation of potential researchers <b>Mitigation:</b> Seek alternate incentives and/or support from national bodies

**Strategy G: Promote innovative research outcomes.**

**Initiative 3: Promote scientific meetings to develop outstanding locally-initiated research activities and ideas.**

#	Action	Responsibility	Time Frame	Performance indicator and Target	Resources	Risks
1	Expand the idea of the annual PDO Souq to involve other companies	ADPSR/DoR,	2016-2020	<b>PI:</b> Number of companies and projects/company taking part in the Souq	Financial and Human resources	<p><b>Risk:</b> Companies do not send senior management staff</p> <p><b>Impact:</b> low number of joint research projects</p> <p><b>Mitigation:</b> Ask companies to send senior management.</p> <p><b>Risk:</b> Low turnout of SQU staff</p> <p><b>Impact:</b> low number of joint research projects</p> <p><b>Mitigation:</b> Motivate staff to attend the Souq</p>

<b>Strategy G: Promote innovative research outcomes.</b>						
<b>Initiative 4:</b> Communicate information regarding research outcomes to beneficiaries.						
#	Action	Responsibility	Time Frame	Performance indicator and Target	Resources	Risks
1	Publicize research achievements in local and social media	ADPSR	2016-2020	<b>PI:</b> Number of media reports and/or articles <b>Target:</b> one report or article/ month	Financial and Human resources	<b>Risk:</b> Weak collaboration from staff and the media <b>Impact:</b> insignificant achievements reported <b>Mitigation:</b> Provide executive staff at college to coordinate

<b>Strategy H: Adopt international indicators to evaluate research activities and outcomes.</b>						
<b>Initiative 1:</b> Identify international indicators of research excellence and recognition.						
#	Action	Responsibility	Timeframe	Performance indicator and target	Resources	Risks
1	Identify and use international indicators of research excellence and recognition	ADPSR/DoR/DVCPSR	2017 – onwards	<b>PI:</b> Number of identified indicators	Human resources	-

<b>Strategy H: Adopt international indicators to evaluate research activities and outcomes.</b>						
<b>Initiative 2:</b> Identify appropriate research indicators of national relevance.						
#	Action	Responsibility	Timeframe	Performance indicator and target	Resources	Risks
1	Identify/develop research indicators in relevance to national research priorities	ADPSR/DoR/DVCPSR	2017 – 2018	PI: Number of identified research indicators	Human resources	-

<b>Strategy H: Adopt international indicators to evaluate research activities and outcomes.</b>						
<b>Initiative 3:</b> Develop a periodical research performance appraisal system based on research output indicators.						
#	Action	Responsibility	Timeframe	Performance indicator and target	Resources	Risks
1	Update current appraisal system to include the identified research indicators	DoR/DVCs	Once in every five year plan	PI: Improved appraisal system Target: All identified research indicators are included	Human resources	-



## College of Engineering

### Domain 4.4: Creativity and Innovation

#### Domain 4.4: Creativity and Innovation

<b>Strategy: A: Regularly review university regulations and processes to promote innovation.</b>						
<b>Initiative: 1. Review relevant international best practice in innovation systems.</b>						
<b>#</b>	<b>Action</b>	<b>Responsibility</b>	<b>Timeframe</b>	<b>Performance indicator and Target</b>	<b>Resources</b>	<b>Risks</b>
1	Form a review committee at the university level by incorporating members from each college.	DVCPSR	2016	New committee formed	-	-
2	Identify some universities with impressive track record for innovation.	New Committee	2017	Identified universities	Faculty time	-
3	Identify the model/strategy of innovation and the management practice these universities are following.	New Committee	2017	Identified models/strategies	Faculty time	-

**Five-Year Implementation Plan  
College of Engineering  
2016 – 2020**

**Domain 4.4: Creativity and Innovation**

**Strategy: A: Regularly review university regulations and processes to promote innovation.**

**Initiative: 2. Identify barriers to innovation in SQU's governance and management system.**

#	Action	Responsibility	Timeframe	Performance indicator and Target	Resources	Risks
1	Compare the practice of innovation between SQU and identified universities.	New committee	2017	Identified best practices	Financial and human resources	-
2	Identify barriers to innovation in SQU based on comparison study.	New committee	2018	Barriers identified	Faculty time	-
3	Organize national symposium to discuss barriers on innovation.	New committee	2018	Symposium organized with proposed solutions	Financial and human resources	-

**Five-Year Implementation Plan  
College of Engineering  
2016 – 2020**

**Domain 4.4: Creativity and Innovation**

**Strategy: A: Regularly review university regulations and processes to promote innovation.**

**Initiative: 3. Propose changes to governance and management in line with best practice and within the national context.**

#	Action	Responsibility	Timeframe	Performance indicator and Target	Resources	Risks
1	Identify issues related to innovations that have significant impact on governance and management practice at SQU.	DVCPSR	2016	Issues identified	-	-
2	Develop new model of governance and management practice by taking into account issues raise in action 1 and A-2: action 3.	DVCPSR	2017	Developed model	-	-

**Five-Year Implementation Plan  
College of Engineering  
2016 – 2020**

**Domain 4.4: Creativity and Innovation**

**Strategy: A: Regularly review university regulations and processes to promote innovation.**

**Initiative: 4. Initiate activities aimed at enhancing SQU's human capital in creativity and innovation.**

#	Action	Responsibility	Timeframe	Performance indicator and Target	Resources	Risks
1	Develop process that helps to enhance SQU's human capital in creativity and innovation	DVCPSR	2017	Developed process	-	-
2	Establish academic staff exchange program with identified universities	DVCPSR/DVCAACS/AVCEC	2017	Number of exchanges	Financial resources	-

**Five-Year Implementation Plan  
College of Engineering  
2016 – 2020**

**Domain 4.4: Creativity and Innovation**

**Strategy: A: Regularly review university regulations and processes to promote innovation.**

**Initiative: 5. Include recognized innovators and entrepreneurs in advisory boards.**

#	Action	Responsibility	Timeframe	Performance indicator and Target	Resources	Risks
1	Identify and include innovators and prominent entrepreneurs in advisory boards	Dean, HoDs	2016	Number of innovators and entrepreneurs in advisory boards	-	-
2	Incorporate feedback of advisory board in the improvement of curricula and designing a program/project	ADUS	2017	Improvements in curricula	-	-

**Five-Year Implementation Plan  
College of Engineering  
2016 – 2020**

**Domain 4.4: Creativity and Innovation**

<b>Strategy: B: Promote awareness of creativity and innovation in the SQU community.</b>						
<b>Initiative: 1. Initiate activities aimed at enhancing awareness of creativity and innovation among staff and students.</b>						
<b>#</b>	<b>Action</b>	<b>Responsibility</b>	<b>Timeframe</b>	<b>Performance indicator and Target</b>	<b>Resources</b>	<b>Risks</b>
1	Organize seminars/workshops on creativity and innovation	Office of Innovation Affairs	2016 -2020	PI: Number of seminars/workshops arranged Target: At least two seminars/workshops per year	Financial resources	-
2	Promote use of information and communication technologies to enhance awareness on innovation	CIS, ADICTS, Public Relations and Information Department	2016-2020	Number of tools used to promote awareness on innovation	Financial resources	-
3	Present successful projects and their impact on society and economy to the stakeholders	DVCPSR/Dean	2017-2020	Number of projects presented per year	Human and financial resources	-

**Five-Year Implementation Plan  
College of Engineering  
2016 – 2020**

**Domain 4.4: Creativity and Innovation**

<b>Strategy: B: Promote awareness of creativity and innovation in the SQU community.</b>						
<b>Initiative: 2. Initiate specific activities aimed at selected SQU staff and students to enhance awareness of creativity and innovation.</b>						
<b>#</b>	<b>Action</b>	<b>Responsibility</b>	<b>Timeframe</b>	<b>Performance indicator and Target</b>	<b>Resources</b>	<b>Risks</b>
1	Develop a framework to identify potential innovators within SQU	Deanship of Research (DoR)	2016	Framework developed	Human resources	-
2	Identify potential innovators based on developed framework	ADPSR/DoR	2017	Potential innovators identified	Faculty time	-
3	Provide necessary support to carry out innovative projects	DVCPSR	2017-2020	Number of projects initiated	Financial resources	-

**Five-Year Implementation Plan  
College of Engineering  
2016 – 2020**

**Domain 4.4: Creativity and Innovation**

**Strategy: C: Embed creativity and innovation modules and courses in relevant academic programmes emphasising local needs and global trends.**

**Initiative: 1. Offer introductory courses on innovation and entrepreneurship as university electives.**

#	Action	Responsibility	Timeframe	Performance indicator and Target	Resources	Risks
1	Develop and offer an introductory course on innovation and entrepreneurship as university elective	College of Engineering (ADUS)	2016	Offering of the course	one faculty member in the area	Lack of resources. <b>Impact:</b> course is not offered <b>Mitigation:</b> Courses offered occasionally with extra load payment or seek qualified people from industry.



**Five-Year Implementation Plan  
College of Engineering  
2016 – 2020**

**Domain 4.4: Creativity and Innovation**

**Strategy: C: Embed creativity and innovation modules and courses in relevant academic programmes emphasising local needs and global trends.**

**Initiative: 2. Offer specialised courses on innovation and entrepreneurship in relevant academic programmes.**

#	Action	Responsibility	Timeframe	Performance indicator and Target	Resources	Risks
1	Check the feasibility of innovation and entrepreneurship course in the programme and add a course if it is feasible	HoDs	Starting in 2016 whenever degree plans are revised.	Decision on adding innovation and entrepreneurship course in the programme	Faculty time	-
2	Incorporate elements of innovation in selected courses	HoDs	Starting in 2016 whenever degree plans are revised.	Number of modified courses	Faculty time	-

**Five-Year Implementation Plan  
College of Engineering  
2016 – 2020**

**Domain 4.4: Creativity and Innovation**

<b>Strategy: C: Embed creativity and innovation modules and courses in relevant academic programmes emphasising local needs and global trends.</b>						
<b>Initiative: 3. Invite innovators and entrepreneurs from business and industry to deliver modules/courses on innovation and entrepreneurship emphasising the local context as well as global trends.</b>						
#	Action	Responsibility	Timeframe	Performance indicator and Target	Resources	Risks
1	Build a data base of potential speakers in innovation and entrepreneurs	ADTCS	2017	data base	Faculty time	-
2	Invite selected speakers for innovation and entrepreneurship speeches	ADTCS	Every time the degree plan is revised	Number of invited speakers	Faculty time and financial resources	-

**Five-Year Implementation Plan  
College of Engineering  
2016 – 2020**

**Domain 4.4: Creativity and Innovation**

**Strategy: C: Embed creativity and innovation modules and courses in relevant academic programmes emphasising local needs and global trends.**

**Initiative: 4. Establish interdisciplinary programmes that foster creativity and innovation.**

#	Action	Responsibility	Timeframe	Performance indicator and Target	Resources	Risks
1	Evaluate the viability of establishing interdisciplinary programmes with other SQU disciplines	ADUS	2017 whenever degree plans are revised	Evaluation report	Faculty time	-
2	Establish interdisciplinary programmes identified in (1)	Dean	2018	Number of established interdisciplinary programmes	Faculty time and financial resources	-

**Unit: College of Engineering  
2016–2020 Strategic Plan**

**Domain 4.4: Creativity and Innovation**

<b>Strategy D: Promote creativity and innovation in teaching and learning.</b>						
<b>Initiative 1: Organise career and professional development programmes on creative and innovative teaching methods.</b>						
<b>#</b>	<b>Action</b>	<b>Responsibility</b>	<b>Timeframe</b>	<b>Performance indicator and target</b>	<b>Resources</b>	<b>Risks</b>
1	Identify and prioritise creative and innovative teaching methods for which development programmes need to be organised (by means of visits, workshops, retreats)	College Instructional Development Committee (CIDC)	Starting Fall 2017	PI: number of identified methods  Target: 2 methods	Faculty time	Limited financial resources Additional load on faculty. <b>Impact:</b> Low productivity in research and community services. <b>Mitigation:</b> Reduce administrative load of the committee members
2	Develop professional development programmes based on the identified methods (visits, workshops, retreats)	College Instructional Development Committee (CIDC)	2018-2020	PI: number of development programmes Target: At least 2 development programme	Faculty time Financial and Human Resources	Ineffective or poorly designed programme(s)  <b>Impact:</b> Objective not fully achieved  <b>Mitigation:</b> Arrange visits/attend workshops and invite speakers from outside of SQU to help in the design of an effective development programme.
3	Deliver professional development programmes	College Instructional Development Committee	2019-2020	PI: Number of Delivered	Financial and	Lack of motivation to participate <b>Impact:</b> Objective not fully achieved

	based on the identified methods	(CIDC)		programmes Target: At least 1 programme	HR	<b>Mitigation:</b> Increase awareness on the importance of such programmes and its effects on academic carriers.
4	Assess the improvement in the level of awareness about creative and innovative teaching techniques due to such professional development programmes	College Instructional Development Committee (CIDC)	2020	PI: Number of Surveys utilized for assessment Target: 1 survey per two years	HR	Poorly designed survey forms <b>Impact:</b> Inaccurate information collected <b>Mitigation:</b> An outcome based approach should be adopted to design survey questionnaires by faculty members with relevant experience.

**Unit: College of Engineering  
2016–2020 Strategic Plan**

**Domain 4.4: Creativity and Innovation**

**Strategy D: Promote creativity and innovation in teaching and learning.**

**Initiative 2: Provide the required resources and infrastructure to support creative and innovative teaching and learning.**

#	Action	Responsibility	Timeframe	Performance indicator and target	Resources	Risks
1	Identify essential resources for the selected methods in Initiative 1	College Instructional Development Committee (CIDC)	2019-2020	PI: Reports on resources required for listed methods Target: At least one report per year	Faculty time	Additional load on faculty. <b>Impact:</b> Low productivity in research and community services. <b>Mitigation:</b> Reduce administrative load of the committee members.
2	Secure resources (software, labs, grades and educational tools)	Dean	2019-2020	Operational platform to deliver few courses using creativity and innovation in teaching and learning	Allocated budget	Lack of resources/infrastructure <b>Impact:</b> Delay in the implementation of the selected innovative and creative techniques in teaching and learning. <b>Mitigation:</b> Implement the selected techniques in the next cycle of the strategic plan (2021-2025).

**Unit: College of Engineering  
2016–2020 Strategic Plan**

**Domain 4.4: Creativity and Innovation**

**Strategy D: Promote creativity and innovation in teaching and learning.**

**Initiative 3: Establish effective networking channels for potential faculty and students for the exchange of ideas and experiences with local and international organisations.**

#	Action	Responsibility	Timeframe	Performance indicator and target	Resources	Risks
1	Identify local, regional and international organisations	College Instructional Development Committee (CIDC)	2017-2018	<b>PI:</b> number of selected organisations <b>Target:</b> At least 1 regional and 1 international organisation	Faculty time	Lack of interest from the possible partner organizations. Additional load on faculty. <b>Impact:</b> Low productivity in research and community services. <b>Mitigation:</b> Reduce the administrative load of the committee members.
2	Establish links by organizing visits/talks/seminars/workshops/meetings to exchange ideas and experiences on creativity and innovation with the selected organizations	College Instructional Development Committee (CIDC)	2019-2020	<b>PI:</b> Networking events <b>Target:</b> At least two events per year	Financial, HR and logistics	Lack of resources

**Unit: College of Engineering**

**2016–2020 Strategic Plan**

**Domain 4.4: Creativity and Innovation**

<b>Strategy D: Promote creativity and innovation in teaching and learning.</b>						
<b>Initiative 4: Adopt creative and innovative teaching and assessment techniques.</b>						
<b>#</b>	<b>Action</b>	<b>Responsibility</b>	<b>Timeframe</b>	<b>Performance indicator and target</b>	<b>Resources</b>	<b>Risks</b>
1	Select appropriate creative and innovative teaching and assessment techniques for selected courses	College Instructional Development Committee (CIDC)/ HoDs	2017	PI: Number of selected techniques/courses  Target: select 15% of the courses in the college	Faculty time	Additional load on faculty  <b>Impact:</b> Low productivity in research and community services.  <b>Mitigation:</b> Reduce the administrative load of the committee members.
2	Implement the selected techniques in the selected courses	HoDs	2018	PI: number of courses offered using the selected course techniques  Target: One assessment survey per two years per	Faculty time and budget	Additional load on faculty  <b>Impact:</b> Low productivity in research and community services.  <b>Mitigation:</b> Reduce administrative load of



				course		committee members
3	Assess the effectiveness of the selected techniques on the course outcomes	College Instructional Development Committee (CIDC)/HoDs	2019	Assessment reports	Faculty time	<p>Additional load on faculty</p> <p><b>Impact:</b> Low productivity in research and community services.</p> <p><b>Mitigation:</b> Reduce administrative load of committee members</p>

## College of Engineering

### Domain 4.4: Creativity and Innovation

#### Domain 4.4: Creativity and Innovation

<b>Strategy E: Motivate faculty and students to conduct research geared towards transforming knowledge to value.</b>						
<b>Initiative 1: Identify potential research areas that may lead to innovative outcomes.</b>						
<b>#</b>	<b>Action</b>	<b>Responsibility</b>	<b>Timeframe</b>	<b>Performance indicator and target</b>	<b>Resources</b>	<b>Risks</b>
<b>1</b>	<b>Identify potential research area that may lead to innovative outcomes</b>	HoDs/ADPSR/Dean	2016-2020	<b>PI:</b> Number of research area identified  <b>Target:</b> Four per college	Human resources	-

#### Domain 4.4: Creativity and Innovation

<b>Strategy E: Motivate faculty and students to conduct research geared towards transforming knowledge to value.</b>						
<b>Initiative 2: Recognise and provide incentives for creative and innovative projects.</b>						
<b>#</b>	<b>Action</b>	<b>Responsibility</b>	<b>Timeframe</b>	<b>Performance indicator and target</b>	<b>Resources</b>	<b>Risks</b>
1	Develop and implement a mechanism (policy or procedure) to identify and incentivize creative and innovative projects	DoR	2018 - 2020	PI: A developed procedure  Target:	Financial and human resources	Risk: Lack of financial resources  Impact: Demotivation of potential researchers  Mitigation: Seek alternate incentives and/or support from national bodies

#### Domain 4.4: Creativity and Innovation

<b>Strategy E: Motivate faculty and students to conduct research geared towards transforming knowledge to value.</b>						
<b>Initiative 3: Adopt an attractive IP policy for creativity and innovation.</b>						
<b>#</b>	<b>Action</b>	<b>Responsibility</b>	<b>Timeframe</b>	<b>Performance indicator and target</b>	<b>Resources</b>	<b>Risks</b>
1	Should be done at SQU level					

**Domain 4.4: Creativity and Innovation**

<b>Strategy E: Motivate faculty and students to conduct research geared towards transforming knowledge to value.</b>						
<b>Initiative 4: Establish open platforms for innovation such as high-end laboratories and science parks.</b>						
<b>#</b>	<b>Action</b>	<b>Responsibility</b>	<b>Timeframe</b>	<b>Performance indicator and target</b>	<b>Resources</b>	<b>Risks</b>
<b>1</b>	<b>Identify areas of mutual interest that may benefit from such platforms</b>	HoDs/Dean/IABs	2017	<b>PI:</b> Number of areas	Human resources	-
<b>2</b>	<b>Organize platforms</b>	APPSR/Dean	Once in two years starting from 2018	<b>PI:</b> Number of platforms  <b>Target:</b> Once in two years	Financial and human resources	<b>Risk:</b> Not able to organize due to financial restraint Low turnout from researchers and industry  <b>Impact:</b> Inadequate exchange of research ideas

#### Domain 4.4: Creativity and Innovation

<b>Strategy E: Motivate faculty and students to conduct research geared towards transforming knowledge to value.</b>						
<b>Initiative: 5. Encourage the exchange of ideas between disciplines, researchers and industry.</b>						
<b>#</b>	<b>Action</b>	<b>Responsibility</b>	<b>Timeframe</b>	<b>Performance indicator and Target</b>	<b>Resources</b>	<b>Risks</b>
1	Establish a forum between SQU researchers and local industries/ organization for mutual benefits	HoDs, Advisory boards	2016	Number of forums	Faculty time	-
2	Identify common research areas among SQU and external organization to have a collaborative research	HoDs, Advisory boards	2016	Number of research projects	Faculty time	-
3	Establish focus groups for each discipline to promote collaboration between researcher and industry	HoDs	2016	Number of focus groups	Faculty time	-

**Domain 4.4: Creativity and Innovation**

<b>Strategy E: Motivate faculty and students to conduct research geared towards transforming knowledge to value.</b>						
<b>Initiative 6: Establish collaboration with institutions with track record in innovative research.</b>						
<b>#</b>	<b>Action</b>	<b>Responsibility</b>	<b>Timeframe</b>	<b>Performance indicator and target</b>	<b>Resources</b>	<b>Risks</b>
1	Identify institutions with track record in innovative research	Department and College Boards	(2017-2018)	<b>PI:</b> Number of institutions identified  <b>Target:</b> At least one institution/department	Human resources	-
2	Establish collaboration with identified institutions	Department/College/AVCEA	Starting from 2018	<b>PI:</b> Established collaborations	Financial and human resources	<b>Risk:</b> Lack of interest from other institutions for collaboration  <b>Impact:</b> No established collaboration  <b>Mitigation:</b> Search for other collaborators

## College of Engineering

### Domain 4.5: Community Engagement

<b>Strategy A: Expand and diversify society collaboration and partnerships.</b>						
<b>Initiative 1: Identify areas of collaboration.</b>						
#	Action	Responsibility	Time Frame	Performance Indicator & Target	Resources	Risks
1	Identify possible areas for collaboration and partnership	ADITCS/DVCAACS/AVCEA	2016-2017	PI: Areas of collaboration and partnership identified Target: At least two areas per college	Financial and human resources	-
<b>Initiative 2: Identify potential institutions and organisations with whom to establish collaboration.</b>						
#	Action	Responsibility	Time Frame	Performance Indicator & Target	Resources	Risks
1	Prepare a list of potential institutions and organizations to establish collaboration in identified areas	HoD/ ADITCS/DVCAACS/AVCEA	2017-2018	PI: Number of institutions/ organizations identified Target: At least one institutions/ organizations per area	Human resources	-
<b>Initiative 3: Devise and implement structured mechanisms for collaboration and partnerships</b>						
#	Action	Responsibility	Time Frame	Performance Indicator & Target	Resources	Risks
1	Develop a mechanism to establish collaboration and partnership	DVCs/AVCEA	2016-2018	PI: Policy document Target: To be completed	Human resources	Risk: Delay in policy development Impact: Loss of

				by 2018		potential collaborators Mitigation: Continue with existing system of collaboration
2	Establish links with potential collaborators	HoD/ADICTS/Dean	2019-2020	PI: Number of collaborations Target: At least one per area	Financial and human resources	Risk: Low level of interest in specific areas Impact: Low/no collaboration Mitigation: Act proactively through SQU outreach
<b>Initiative 4: Create structured links with alumni to promote engagement</b>						
#	Action	Responsibility	Time Frame	Performance Indicator & Target	Resources	Risks
1	Improve communication system with alumni	CCG	2016	PI: Improved communication system	Human resources	Inefficient system Impact: Low number of active engagements insufficient feedback Mitigation: Revise system for further improvement
2	Establish 'Alumni Center' at SQU level	VC	2017	Financial and human resources	PI: Established Center	-
<b>Initiative 5: Establish networks and advisory groups for professional programmes</b>						
#	Action	Responsibility	Time Frame	Performance Indicator & Target	Resources	Risks
1	Strengthen existing Industrial Advisory	HoD/Dean	2016	Number of established groups	Financial and human resources	-



	Boards and/or establish networks with new groups					
<b>Strategy B: Develop specialized programmes for business, industry and professional</b>						
<b>Initiative 1: Assess community needs for specialised programmes</b>						
#	Action	Responsibility	Timeframe	Performance Indicator and Target	Resources	Risk
1	Organize activities with the community and stakeholders for defining community needs	ADICTS/CCE/DVCAACS	Starting from 2016	PI: Number of organized activities	Financial and human resources	-
<b>Initiative 2: Design and market specialised programmes</b>						
#	Action	Responsibility	Timeframe	Performance Indicator and Target	Resources	Risk
1	Develop, market and offer specialised programmes	HoD/ADICTS/Dean	2019-2020	PI: Number of specialized programmes offered	Financial and human resources	-
<b>Strategy C: Expand continuing career development programmes for the general public</b>						
<b>Initiative 1: Assess the community's needs for general training programmes.</b>						
#	Action	Responsibility	Timeframe	Performance Indicator and Target	Resources	Risk
1	Organize activities with the community and stakeholders to assess needs for	ADICTS/CCE/DVCAACS	2016-2020	PI: Number of organized activities	Financial and human resources	-

	general training programmes					
<b>Initiative 2: Design and promote these programs</b>						
#	Action	Responsibility	Timeframe	Performance Indicator and Target	Resources	Risk
1	Design/promote training programmes	HoD/ADICTS/CCE/DVCAACS	2016-2020	PI: Number of training programmes offered Target: Five training programmes per college	Financial and human resources	Low number of training programmes offered Impact: Low community engagement Mitigation: Better financial reward to the faculty
<b>Initiative 3: Utilise available expertise nationally in academic, research and training programmes</b>						
#	Action	Responsibility	Timeframe	Performance Indicator and Target	Resources	Risk
1	Identify and utilize nationally available expertise in academic, research and training programmes	HoDs/ADICTS/Dean	2017-2020	PI: List of utilized expertise	Financial and human resources	-
<b>Strategy D: Foster a culture of civic duty among staff and students</b>						
<b>Initiative 1: Motivate staff and student to take a proactive role in community activities</b>						
#	Action	Responsibility	Timeframe	Performance Indicator and Target	Resources	Risk
1	Introduce and appraise a system for	DVCs/VC	2017-2018	PI: Developed system	Human resources	-

	motivating staff and students' t participation in community activities					
2	Motivate staff/students to offer community services	HoD	2018 onwards	PI: Number of community activities	Financial and human resources	
3	Encourage students' societies to offer community services	Students' Societies	Annually	PI: Number of community activities	Financial and human resources	
<b>Initiative 2: Recognize in an appropriate way outstanding achievements in community service</b>						
#	Action	Responsibility	Timeframe	Performance Indicator and Target	Resources	Risk
1	Implement the system to recognize outstanding achievements	DVCs/VC	2018-2019	PI: Developed system	Human resources	-
<b>Initiative 3: Broaden voluntary community services</b>						
#	Action	Responsibility	Timeframe	Performance Indicator and Target	Resources	Risk
1	Encourage staff and students to cover large geographical areas.	HoDs	2017-2020	New areas covered	Financial and human resources	-
2	Encourage staff and students to cover new different fields	HoDs	2017-2020	New fields covered	Financial and human resources	-

<b>Strategy E: Expand outreach programmes and services</b>						
<b>Initiative 1: Enhance engagement in community cultural activities</b>						
<b>#</b>	<b>Action</b>	<b>Responsibility</b>	<b>Timeframe</b>	<b>PI/ target</b>	<b>Resources</b>	<b>Risk</b>
1	Prepare list of cultural events	HoDs/ADICTS	Annually (2016-2020)	Annual list	Faculty time	-
2	Organise and participate in activities during the events	Staff/students	(2016-2020)	Activities	Time and financial	-Poor community attendance Impact -Low engagement  Mitigations Involve community in the organisations of the cultural events
<b>Initiative 2: Expand consultancy services.</b>						
<b>#</b>	<b>Action</b>	<b>Responsibility</b>	<b>Timeframe</b>	<b>PI/ target</b>	<b>Resources</b>	<b>Risk</b>
1	Establish an industrial outreach unit at the college level	Dean	2016	Established unit	Time and fund	-
2	Carryout consultancy services	the established unit	2017-2020	Number of consultancies	Time and fund	Risk: Low/lack of interest among staff Impact: : Low/lack of consultancy works Mitigation: Provide incentive and motivate

<b>Initiative 3: Utilise the media to raise public awareness of community engagement activities</b>						
#	Action	Responsibility	Timeframe	PI/ target	Resources	Risk
1	Invite the media to cover more activities	ADICTS	2016-2020	Number of covered activities	Time and fund	-

<b>Strategy F: Devise and implement quality assessment mechanisms.</b>						
<b>Initiative 1: Set up performance indicators for community engagement.</b>						
#	Action	Responsibility	Time Frame	Performance indicator and Target	Resources	Risks
1	Identify and select appropriate performance indicators for community engagement.	ADICTS	2016	PI: Set of performance indicators	Human resources	-

<b>Strategy F: Devise and implement quality assessment mechanisms.</b>						
<b>Initiative 2: Specify targets for community engagement achievement</b>						
#	Action	Responsibility	Time Frame	Performance indicator and Target	Resources	Risks
1	Specify targets for selected performance indicators	ADICTS	2017	PI: Set of targets	Human resources	-