CEST 2018 END OF THE YEAR RESEARCH REPORT

Associate Dean Research – Dr Jimaima Lako

1.0 Introduction

The College of Engineering, Science and Technology has a total of 334 staff comprised both teaching and administration staff with both TVET and HE. There are eight schools; Building and Civil Engineering; Mechanical Engineering; Electrical and Electronics Engineering; Mathematics and Transport; Pure Sciences; Applied Sciences and Maritime Studies, comprised of a total of 24 departments. The College has only four Professors, four Associate Professors, 18 Assistant Professors, 44 Masters and 43 Postgraduate Diploma holders. This means that only 33.8% hold postgraduate qualifications, while 67.2% hold undergraduate qualifications as shown in Table 1 below.

Table 1: CEST STAFF QUALIFICATIONS

School	Cert	Dip	Bachelor	PGC	PGDip	Master	PhD	Prof	Total
Building & Civil Engineering	5	18	16	0	0	9	1	0	49
Mechanical Engineering	14	16	10	0	5	9	2	0	56
Electrical & Electronics Engineering	6	19	8	1	4	5	2	0	45
Mathematics & Computing	0	3	8	0	14	12	3	0	40
Transport	12	27	4	0	4	1	0	0	48
Pure Sciences	0	6	4	0	9	8	9	4	40
Applied Sciences	0	5	4	0	6	3	5	0	23
Maritime Studies	14	13	8	0	1	1	0	0	37
Total	**51**	**107**	**62**	**1**	**43**	**44**	**22**	**4**	**334**

2.0 Staff Publications

There are total of 23 publications from the college with various ranks as listed in Table 2 below. A total of eight Q1, four Q2, three Q3, one Q4 and two Pacific Journals publications while there are 2-A and 2-B ranked Book Chapters or Books publications and 1 unranked journal publication.

Table 2: CEST 2018 Publications

	Staff Name	Reference	Journal/Book/Book Chapters	Rank
1	Todd Dennis	Tucker, M. A., Böhning-Gaese, K., Fagan, W. F., Fryxell, J. M., Van Moorter, B., Alberts, S. C., ... & Bartlam-Brooks, H. (2018). Moving in the Anthropocene: Global reductions in terrestrial mammalian	Journal	Q1

		movements. *Science*, *359* (6374), 466-469.		
2	Todd Dennis	Simpkins, C. E., Dennis, T. E., Etherington, T. R., & Perry, G. L. (2018). Assessing the performance of common landscape connectivity metrics using a virtual ecologist approach. Ecological Modelling, 367, 13-23.	Journal	Q2
3	Rajeev Bhat	Rajeev Bhat (editor); (2017) Sustainability challenges in the agrofood sector, Wiley Blackwell ISBN 978-1-119-07276-8, pages 712	Book (editor)	A
4	Bimal Kumar	Bimal Aklesh Kumar and Priya Mohite (2018). Usability study of mobile learning application in higher education context : An example from Fiji National University. In Mobile learning in higher educatin in the Asia-Pacific region : Harnessing Trends and Challenges. Springer Publishers. Pages 607-622.	Book Chapter	B
5	Arti Pillay	Webster J, Pillay A, Suku A, Gohil P, Santos JA, Schultz J, Wate J, Trieu K, Hope S, Snowdon W, Moodie M, Jan S, Bell C (2018). Process Evaluation and costing of a mutlifaceted population-wide intervention to reduce salt consumption in Fiji. Nutrients;10(2). pii: E155. doi: 10.3390/nu10020155	Journal	Q1
6	Shiu Kumar	Shiu Kumar and Alok Sharna, "A new parameter tuning approach for enhanced motor imagery EEG signal classification". (2018) Medical and Biological Engineering and Computing, Springer Publishers. DOI: 10.1007/s11517-018-1821-4	Journal	Q2
7	Lia Bogitini	Chapter 18: A writers Worry and Avenues to Pursue	Book Chapter	B
8	Vikrant Krishan Nair	“Rethinking and Revisiting Education for Sustainable Development”, 88th AGM of Fiji Teachers Union Journal, Volume 88; Pp. - 82 - 83.	Journal	Pacific Related Journal
10	Prof. Boris Usachev	B.I. Usachev (2018). Chemistry of fluoroalkyl-substituted 1,2,3-triazoles. Journal of Fluorine Chemistry, Vol. 210, P. 6–45; LINK: https://www.sciencedirect.com/science/article/pii/S0022113917304955	Journal	No ranking
11	Satyanand Singh	Satyanand S. (2018). Support Vector Machine Based Approaches For Real Time Automatic Speaker Recognition System. International Journal of Applied Engineering Research, ISSN 0973-4562, Volume 13, Number 10 (2018) pp. 8561-8567 http://www.ripublication.com	Journal	Q3
12	Prof. Tibor Pasinszki	Tibor Pasinszki and Melinda Krebsz: Biosensors for Non-Invasive Detection of Celiac Disease Biomarkers in Body Fluids. Biosensors 2018, 8, 55; doi:10.3390/bios8020055	Journal	Q1
13	Bimal Aklesh Kumar	https://www.igi-global.com/article/mobile-app-to-support-teaching-in-distance-mode-at-fiji-national-university/210433	Book Chapter	Q4
14	Jimaima Lako	Consumer preferences for Nile tilapia (Oreochromis niloticus) value-added products in Samoa	Journal	Pacific Journal
15	Dr. Satyanand Singh	Singh, S. (2018) "Speaker Recognition by Gaussian Filter Based Feature Extraction and Proposed Fuzzy Vector Quantization Modelling Technique" International Journal of Applied Engineering Research ISSN 0973-4562 Volume 13, Number 16 (2018) pp. 12798-12804 http://www.ripublication.com/ijaer18/ijaerv13n16_55.pdf	Journal	Q3
16	Satyanand Singh	Singh, S. (2018) "Evaluation of Sparsification algorithm and Its Application in Speaker Recognition System" International Journal	Journal	Q3

		of Applied Engineering Research ISSN 0973-4562 Volume 13, Number 17 (2018) pp. 13015-13021 http://www.ripublication.com/ijaer18/ijaerv13n17_06.pdf		
17	Ronesh Asnil Sharma	"Yosvany López, Piotr Kamola, Ronesh Sharma, Daichi Shigemizu, Tatsuhiko Tsunoda, Alok Sharma: Computational Pipelines and Workflows in Bioinformatics. *In: Encyclopedia of Bioinformatics and Computational Biology*. Edited by Ranganathan S, Gribskov M, Nakai K, Schönbach C. Oxford: Academic Press; 2019: 113-134.	Book Chapter	A
18	Ravita Prasad	Prasad, R. D. and Raturi, A. (2018) "Low-carbon measures for Fiji's land transport energy system" Utilities Policy, vol. 54, pp. 132-147.	Journal	Q1
19	Satyanand Singh	Singh, S. (2018) "Forensic and Automatic Speaker Recognition System" International Journal of Electrical and Computer Engineering (IJECE), Vol. 8, No. 5, October 2018, pp. 2804~2811 https://www.iaescore.com/journals/index.php/IJECE/article/view/9650/9208	Journal	Q2
20	Ronesh Ashnil Sharma	Ronesh Sharma, Alok Sharma, Gaurav Raicar Tatsuhiko Tsunoda and Ashwini Patil, OPAL+: Length-Specific MoRF prediction in intrinsically disordered protein sequences, Proteomics (in press), (https://www.sciencedirect.com/science/article/pii/B9780128096338200897?via%3Dihub).	Journal	Q1
21	Todd Dennis	Schultz, H., Hohnhold, R. J., Taylor, G. A., Bury, S. J., Bliss, T., Ismar, S. M., ... & Dennis, T. E. (2018). Non-breeding distribution and activity patterns in a temperate population of brown skua. Marine Ecology Progress Series, 603, 215-226.	Journal	Q1
22	Abirami Ganesan	Effect of potassium hydroxide on rheological and thermomechanical properties of semi-refined carrageenan (SRC) films	Journal	Q1
23	Bimal A Kumar & Sailesh Chand	Mobile Learning Adoption: A Systematic Review., Education and Information Technologies	Journal	Q2
24	Adrian A Chetty	Estimated dietary intake of nitrate and nitrite from meat consumed in Fiji - (Name of Journal - Food Chemistry / Elsevier	Journal	Q1

3.0 Conference Presentations

A total of eight staff applied for conferences, however only three applicants were approved in 2018 as listed in Table 3 below. Disapproval of conference was due to predatory conference and the poor quality of research papers.

Table 3: CEST Approved Conferences

Name	Presentation Title	Conference Venue and date	Amount approved
Ronesh Sharma	Discovering MoRFs by trisecting intrinsically disordered protein sequence into terminals and middle regions	17th **Annual International Conference on Bioinformatics *(InCoB 2018),*** *Jawaharlal Nehru University, New Delhi from the 26th – 28th September, 2018, India.*	$6,600.00
Mohammed Arif Khan	Pulse Width Modulation Switching Analysis for Three	28th **Australasian Universities Power Engineering Conference (AUPEC)**	$6,153.92

	Phase Dual Inverter System Using Artificial Neural Network	**2018.** University of Auckland, from the 27th – 30th November, 2018, New Zealand	
Sateesh Kumar Pisini	Load-Settlement Behavior of Geogrid-Reinforced Sand Bed Over Granular Piles	33rd **Indian Engineering Conference.** Udaipur, Rajasthan from 21 – 23 December, 2018	$6,999.71

4.0 External Grant Income

CEST has limited external grants, hence only one funded research project was obtained in 2018, as shown in Table 4 below. This means that CEST professors will need to develop and bid for external grants.

Table 4: CEST Externally Funded Project

Name	Project Title	Funding Body and collaborator	Amount
Jimaima Lako	Harmful Algal Bloom (HAB) monitoring in Fiji	International Atomic Energy Agency (IAEA) collaboration with Ministry of Fisheries and FNU	€ 280,000

5.0 Thesis Completion

Currently, the college has a total of 9 postgraduate programmes as listed in the Table below. These postgraduate programmes were only offered for the first time last year, 2018. It is clear from Table 5 that all MSc programmes offer both course work and research based programmes, while all PhD programmes are research based only. It appears that Pure Sciences postgraduate programmes have not attracted students, while Mathematics and Maintenance Engineering are quite popular. A total of 10 students are undertaking Master in Mathematics, while eight students are undertaking Master in Maintenance Engineering. Four other schools are expected to offer MSc and PhD programmes this year, 2019. One way to attract students into postgraduate programmes for the college is to provide instruments and laboratory facilities for its postgraduate students. This may also encourage research among the staff to undertake higher qualification at FNU.

Table 5: CEST Postgraduate Programmes

School	Department	Programme	Research/Course work	Students No.	Expected Completion date
Pure Sciences	Chemistry	MSc in Chemistry	Course work & Research	0	n/a
		PhD (Chemistry	Research	0	n/a
	Biology	MSc in Biology	Course work & Research	0	n/a
		PhD (Biology	Research	0	n/a

	Physics	MSc in Physics	Course work & Research	1	2020
		PhD (Physics)	Research	0	n/a
Mathematics & Computing Sciences	Mathematics	MSc in Mathematics	Course work and Research	10	2020
		PhD (Mathematics)	Research	0	n/a
Mechanical Engineering		MSc in Maintenance	Course work and Research	8	2020

6.0 College Research Submitted

The total of 13 research proposals were submitted to CRC for approval in 2018 was, however only 9 were approved as listed in Table 6 below. The rejected proposals were the poorly written ones that require further improvements.

Table 6: CEST Total Research Submitted to CRC

		Name	**Department and School**	**Research Title**	**Approved /not approved**	**Amount Requested**
1	URC014	Naveendra Krishna Reddy	School of Mathematics & Computer Science	Electrification viability study of FNU Ba campus using photovoltaic technology	Approved	$7,707
2	URC016	Pravin R Chand	School of Transport	Modification of rickshaw to suit local geographical conditions	Approved	$7,000
3	URC017	Litiana Saraqia, Neetika Sahai	School of Applied Science	Effect of Nausori airport sewerage treatment plant on water quality of lower Rewa river (Naselai village)	Approved	$7,500
4	URC018	Yuyun Quomariyah	School of Building & Civil Engineering	The characterization of suva market seasonal vendors in relation to spatial conditions	Approved	$7,950
5	URC020	Dr Raul B Alamban	School of mechanical Engineering	Development of re-engineered rice harvester into a multipurpose light transport and farm operations vehicle/support equipment	Approved	$8,000
6	URC021	Dr. Jimaima Lako	School of Applied Sciences	Investigation of the incidence of fish poisoning in communities in Fiji	Approved	$8,000
7	URC024	Dr. Todd E Dennis	School of Pure Sciences	Developing a powerful new tool for conservation of Fiji's	Approved	$7,990

				globally threatened wildlife: use of an unmanned aerial vehicle for surveying critical populations of terrestrial and marine birds		
8	URC029	Ms. Visheshni Chandra	School of Pure Sciences	A Study on Butterfly Diversity Survey in Natewa Peninsula, Vanua Levu	Approved	$8,000
9	URC027	Dr. Tibor Pasinszki	School of Pure Sciences	Carbon based materials for water purification, catalytic and sensor applications	Approved	$8,000
10		Mr. Ravinesh Ram	School of Pure Sciences	Biopesticide development for rice farms in Vanua Levu, Fiji Islands	Not Approved	$8,000
11		Mr. Ravinesh Ram	School of Pure Sciences	Seasonal biochemical changes in composition of body wall tissue of sea cucumber Holothuria scabra (Sandfish)	Not Approved	$18,160
12		Mr. Ravinesh Ram	School of Pure Sciences	Post ban assessment of the sea cucumber population around the coastal areas of Vanua Levu, Fiji Islands	Not Approved	$8,000
13		Mr. Sitiveni Daunakama kama and Mr. William Fong	School of Electrical & Electronics Engineering	PROPOSED Hybrid Renewable energy and installation costs for a residential home owners in a settlement along Logani / Sebi Road in Bau	Not Approved	$7,760

7.0 Incentive Claim and Research Excellence Awards

A total of 26 incentive claim awards were processed, of which 3 for Quarter 1, 8 for Quarter 2, 5 for Quarter 3 and 10 for Quarter 4 as listed in Table 7 below. Out of the 26 that applied for the incentive claim awards, Dr Rajeev Bhat was also awarded the inaugural award for Research Excellence, due to his remarkable record of research productivity in food science with an H-index of 40 and 6,370 citations to date. Dr Patrick Singh received the Vice Chancellor's Award for Research Excellence for an Early Career Researcher (ECR) with seven top-tier journal papers and six best paper awards for his conference papers.

Table 7: Incentive Claim Awards

No.	Quarter	Name of Authors (s)	Department and School	Quartile / PIJ
1.	1	Ronesh Sharma	School of Electrical & Electronics Engineering	Q1
2.		Abirami R Ganesan	School of Applied Science	Q2

3.		Rajeev Bhat	School of Applied Science	Q2
1.	2	Rajeev Bhat	School of Applied Science	Book Chapter (A)
2.		Rajeev Bhat	School of Applied Science	Book Chapter (A)
3.		Rajeev Bhat	School of Applied Science	Book Chapter (A)
4.		Rajeev Bhat	School of Applied Science	Book Chapter (A)
5.		Bimal Kumar	School of Mathematics & Computer Sciences	Book Chapter (B)
6.		Arti Pillay	School of Applied Science	Q1
7.		Shiu Kumar	School of Electrical & Electronics Engineering	Q2
8.		Satyanand Singh	School of Electrical & Electronics Engineering	Q3
1.	3	Lia Bogitini	School of Applied Science	Book Chapter (B)
2.		Bimal Kumar	School of Mathematics & Computer Sciences	Q4
3.		Sailesh Chand	School of Mathematics & Computer Sciences	Q4
4.		Vikrant Nair	School of Applied Science	PIJ
5.		Ravita Prasad	School of Pure Science	Q1
1.	4	Ronesh Sharma	School of Electrical & Electronics Engineering	Book Chapter (B)
2.		Abirami R Ganesan	School of Applied Science	Q1
3.		Rajeev Bhat	School of Applied Science	Q1
4.		Adrian Chetty	School of Pure Science	Q1
5.		Bimal Kumar	School of Mathematics & Computer Sciences	Q2
6.		Sailesh Chand	School of Mathematics & Computer Sciences	Q2
7.		Ronesh Sharma	School of Electrical & Electronics Engineering	Q1
8.		Satyanand Singh	School of Electrical & Electronics Engineering	Q3
9.		Satyanand Singh	School of Electrical & Electronics Engineering	Q3
10.		Satyanand Singh	School of Electrical & Electronics Engineering	Q2

8.0 Other Developments

8.1 College Research Thematic Groups

The college has developed 5 research thematic groups as listed in Table 8 below that covered all the aspects of the Engineering, Science & Technology fields comprised 8. These thematic groups are aligned to the University research priority areas.

Table 8: CEST Research Thematic Groups and Leaders

Thematic Research Group	Research Leader
Biodiversity, Conservation and Sustainability	Dr. Todd E Dennis (HOD Biology)
Environmental Degradation, Climate Change Adaptation and Mitigation	Dr. Satyanarayan Shashtri (HOD Environmental Science)
Renewable Energy, Safety and Innovation in Engineering	Prof. Abdul Malik (HOD Physics)
Information, Communication, Electrical & Transport Technologies	Dr. Maheswara Rao Valluri – Associate Professor (Associate Dean L&T)
Natural Products and Food Security	Prof. Tibor Pasinszki (HoS Pure Sciences)

8.2 Amended CRC and CPGC

8.2.1 Amended College Research Committee

8.2.1.1 Amendments of the CRC Membership

Memberships include Dean, Associate Dean, Professors, Associate Professors, and Head of Schools.

8.2.1.2 Procedural Changes in the submission of research proposal for Fund approval

- All staff members within the college are encouraged to register themselves to any of the five thematic research group, by sending your name to the corresponding research leader, copying EOCEST for recording.
- All research proposals will need to be first vetted at research group levels through circulation of papers to members by the research group leaders.
- Comments and feedbacks are provided to the researcher to improve the quality of the proposed research.
- Once research group leaders are satisfied with the quality, the proposal is then submitted to the CRC for further vetting and fund approval through the research group leader.

8.2.2 Amended Post-Graduate Committee and Responsibilities

8.2.2.1 Amendments to the CPGC Membership

- Memberships include Dean, Associate Dean, Professors, Associate Professors, Adjunct Professors and nominated Assistant Professors.

8.2.2.2 Procedure for Admission to Master's or PhD students

- Vet the statement of research intent that has been approved by the supervisor (at least two supervisors)

- Submission of research proposal similar to the CRC procedure following the five thematic research group leaders;
    - Biodiversity, Conservation and Sustainability
    - Environmental Degradation, Climate Change Adaptation and Mitigation
    - Renewable Energy, Safety and Innovation in Engineering
    - Information, Communication, Electrical & Transport Technologies
    - Natural Products and Food Security
- All research proposals including students are first vetted at research group levels through circulation of papers to staff members by the research group leaders two weeks prior to CRC meeting.
- Comments and feedbacks are provided to the researcher including students to improve the quality of the proposed research.
- Once research group leaders are satisfied with the quality, the proposal is then submitted to the CRC for further vetting and fund approval through the research group leader.

8.2.2.3 Procedure for submission of progress reports

- End of every semester
- End of first year PhD students seminar presentation for confirmation of candidature

8.2.2.4 Procedure for thesis submission by students and examination

- Three months prior to submission of theses, student to submit the Intention of Submission of Thesis Form together with the principal supervisors list of four-five examiners names; two internal and two-three external, with their updated CVs
- Approvals of examiners are selected by the postgraduate CPC based on their expertise in the research field. Masters, two examiners; one internal and one external. PhD: three examiners; one internal and two external. Examiners will be independent of the supervisors
- Copies of these are dispatched to examiners within 36 hours together with the criteria and guideline set out by the College both in terms of format and quality.
- Approved copies of theses for submission; two copies for Masters and three copies for PhD to the College Research Office.

9.0 Conclusion

Based on the performance highlighted above, CEST research and publications have been performed above expectations, especially given, the limited research resources and high teaching workloads of staff. Two CEST staffs were awarded with inaugural award for Research Excellence and Vice Chancellor's Award for Research Excellence for an Early Career Researcher (ECR); Dr Rajeev Bhat and Dr Patrick Singh respectively.

There seemed to be lots of research interests among the CEST staff. With the provisions of appropriate research resources and reasonable teaching workload of staff, conduct of more research trainings and workshops may encourage and improve more quality research at CEST.

The first lot of postgraduate programmes were only offered last year, 2018 and the college hopes to offer another eight programmes this year, 2019. MSc in Mathematics and Maintenance in Engineering are currently popular, attracting more students. The college anticipates attracting more research students in the future, after establishing its common research laboratories and equipping it with the recently ordered instruments through the procurement and finance office.

THE END