MINUTES
4TH MEETING OF IQAC (CYCLE 03)

2015 June
Internal Quality Assurance Cell (IQAC)
University of Kerala

Minutes of
The Fourth Meeting of IQAC, University of Kerala

Date: 22.06.2015

Contents

Minutes of
The Fourth Meeting of IQAC, University of Kerala
Venue: Syndicate Room
Date: 22.06.2015

Members   Sd/-
01. Prof. P.K. Radhakrishnan, Vice-Chancellor, UoK (**Chairman**)   "
02. Dr. N. Veeramanikandan, Pro Vice-Chancellor, UoK (Vice-Chairman)   "
03. Dr. Mohammed Basheer K., Registrar, UoK   "
04. Dr. Mini Dejo Kappen, Director, Planning & Development, UoK   "
05. Dr. M. Jayaprakash, Director, College Development Council, UoK   "
06. Dr. Vinod Chandra S.S., Director, Computer Centre, UoK   "
07. Dr. K.S. Chandrasekhar, Professor, IMK, UoK   "
08. Dr. C.R. Prasad, Professor, Department of Malayalam, UoK   "
09. Dr. G. Raju, Professor, Department of Commerce, UoK   "
10. Shri. John Williams, Chairman, Departments Union, UoK   "
11. Dr. Achuthsankar S. Nair, Director, IQAC, UoK   "

Item No.Q3.4.01: <u>Confirmation of the minutes of the Third IQAC meeting held on 13.05.2015</u> The minutes of the Third IQAC meeting held on 13.05.2015 as electronically circulated to the members may be confirmed.

     Decision:- Confirmed.

Item No.Q3.4.02: <u>Action Taken Report (ATR) on decisions of the previous meeting</u>

Decision	Action Taken
<u>Outcome of NAAC Re-accreditation & Exit Report</u>: The Vice-chancellor led a detailed discussion on the Exit Report given by NAAC peer team.	Various points raised in the discussion are being used as triggers for making proposals for implementation. This shall be an ongoing activity.
<u>Master Action Plan (MAP) to Improve Quality:</u> The Council noted the steps taken	No action pending
<u>Best Department Contest</u>: The Council entrusted the Registrar to look into the matter and take necessary action to complete the contest.	Letter has been sent to Registrar
<u>Best PhD Thesis Award</u>: The Council discussed the matter and suggested that the Registrar may place the matter before the standing committee of the Syndicate on Academic and Research until which, the processing may be held in abeyance.	Letter has been sent to Registrar.

eBook Project: The Council approved the scheme and also recommended Sri. Hareesh Namboothiri, Senior Graphic Designer in AiCADD, project of Department of Computational Biology & Bioinformatics as design expert. It was resolved that the matter of review of text by teachers may be relooked at after the first lot is published	Proposal for circular along with poster (See back cover of this document) sent to Registrar.
Development of Aptitude Test: Sri. Santhosh C. Kurup of ICT Academy narrated the Academy's own testing system and expressed interest to collaborate or share expertise in this project. Council resolved that this may be studied and the matter be placed afresh before the Council	Director IQAC visited the ICT Academy and held discussions on 27/05/2015. The deliberations shall be discussed in the meeting.
Starting of You Tube Channel of the University: The Council approved the proposal.	Vice Chancellor has written to Director of Victor's channel. Reply awaited.
Re-enlivening Alumni engagement: The Council approved the proposal and entrusted the Registrar to act on it.	Letter has been sent to the Registrar
3-tier Induction Program for 2015-16 Admissions: The Council discussed the proposal and resolved to implement it in the forthcoming admission itself. The dates for the program were fixed as (Day 1), (Day 2), and Day 3 onwards. Day 1 shall be organized by IQAC and funds from IQAC shall be used for the same.	The programme has been conceived. As per the academic calendar submitted to the Chancellor, the PG CSS Semester 1 commences on 5th August after admissions close on 25/07/15. The common induction programme is therefore proposed to be held on 5th August. The proposed date for School level induction session is 6th August and 7th onwards, the Department level induction may be held by each Dept, as per their own decisions, after taking into consideration the suggested topics.
Quality concerns in Admission Process: The Council resolved to approve the above as standing admission policy. Dr. R. Girish Kumar also mooted the idea of national advertisement and test centers in metro cities. It was resolved that CSS Vice-Chairman be entrusted with implementation of the admission policy and national advertisement & metro centers.	Letter sent to Registrar, Controller and Vice-Chairman, CSS.
Vision and Mission Statement of the University: It was resolved that the statement be studied by a committee to be	Committee constituted and entrusted with the work. Report awaited.

suggested by the IQAC sub-committee in consultation with the Vice-Chancellor.	
Committees for Compiling Draft Policies for discussions: It was resolved that 3-members committees be formed for drafting each of these policies (except 2,5 and 6 which have been already framed and placed before the Academic Council). The IQAC sub-committee shall suggest names for each 3-member committee in consultations with the Vice-Chancellor.	Committees constituted and have been issued letters requesting them to act. Reports awaited. (See Appendix 1 for committees)
Feedback system: Council approved this for implementation.	Communicated through email to all faculties. Further steps ongoing
Environment Studies Module recommended by UGC: The Council was informed that module on Environmental studies has been acted upon. Regarding" one student, one tree", the National Service Scheme may be entrusted with action.	NSS is understood to have already acted.
Compilation of AQAR: The Council resolved to entrust the compilation of AQAR with the following committee: Dr. C.R. Prasad, Dr. Ganga Prasad, Dr. Shaji A., and Dr. B. Hariharan.	Letters issued to members of the committee. Report awaited.
Brochure: The Council approved the proposal.	Steps ongoing
Graduate Attributes: The Council approved the draft and resolved that the same may be placed for discussion amongst teachers and Departments Union and then adopted.	Feedback sought and is being compiled
Trans-gender Issues: The Council approved the proposal and entrusted Registrar to initiate action.	Letters written to Registrar
Multi-disciplinary Annual Research Conference(MARC): Dr. A. Shaji made a detailed presentation and after discussions, the proposal was approved. It was resolved that the IQAC shall organize the event.	Dr.A. Shaji has drafted detailed proposal and work is ongoing.
Academic Event Documentation: The form was approved by the Council. The Council suggested that Faculty level data collection also be done.	The form has been communicated to all faculty over email
Department Level Quality Plans: The Council noted the step and also the clarification by the Director that the format for Department level quality plans were	The compiled plan shall be tabled.

flexible and no enforcement of microscopic decisions on the department were done.	
Library Quality Audit: The Council noted the step and suggested the printing of limited copies of the finalized document.	Work nearly completed.
Any other items permitted by the chair: Nil	Nil

> *Decision:-* The Council noted the action taken and resolved that final status of matters communicated to administration may be reported in the next meeting.

Item No.Q3.4.03: Proposal for promoting Interdisciplinarity

In recognition of the emerging view that knowledge is being generated in the interface of traditional disciplines like bio-physics, bio-technology, nanotechnology, mechatronics, psycho-linguistics etc., Universities world over are promoting inter-disciplinary studies, research and approaches. The draft master action plan already approved by the IQAC has also prioritized this. It is now proposed that enabling action in this regard be taken by the University as follows:

- Every masters student be advised by the Faculty advisors to choose at least (a) one elective from an outside department in the same school/faculty and (b) one elective from an outside school/faculty
- Every faculty member who is a research supervisor may consider accepting at least one student at any point of time in an interdisciplinary topic with joint supervisor from another department.
- Every faculty member consider the possibility of seeking funding though collaborative proposals involving investigators from different departments.
- Every Department encourage Masters/MPhil students to take up inter-disciplinary projects under supervision of teachers from different departments.
- Every department consider organizing a seminar or other academic events in collaboration with a different Department.
- Every department consider designing new certificate/diploma/masters or integrated masters programme involving different departments.
- Every School/Department may organize inter-disciplinary talks, inviting experts from both allied and non-allied fields.
- University itself hold 3 Interdisciplinary talks by eminent scholars.
- IQAC holds a workshop on "Paradigms of Interdisciplinary Research", in which some case studies are presented and discussed.

> *Decision:-* The Council discussed the proposal in detail and resolved to recommend the same for implementation. It was also resolved that CSS Academic Committee and HODs shall take up the matter diligently. The Vice Chancellor was authorized to constitute a committee to expand the proposal into a draft interdisciplinary policy.

Item No.Q3.4.04: <u>Proposal for directing research towards the University in selected fields.</u>

The draft master action plan had prioritized directing research towards the University itself so as to improve the University system. Many such areas are possible, such as:

Management: Critical study of University's Management practices (HR, Finance, PR, Strategic planning, IT Management, Infrastructure Management, Marketing etc.)
Law: Critical review of tertiary legislation of the University and also performance of legal wing.
Education: Critical study of curriculum development, assessment and evaluation, pedagogic practices etc.
Journalism: News analysis of University news in media, communication studies on University's web site
History: Study of history of different wings of the University and also its locality.
Psychology: Stress among students & research scholars
Politics: Study of Micro politics in University communities, study of student politics, study of international linkages.
Statistics: Statistical Study of various data sources of the University, including marks.

It is proposed that each Department may asked to respond to this suggestion and propose such areas and start focusing on these in masters and PhD level. IQAC may consider action in this regard.

> *Decision:-* IQAC approved the proposal and recommend that a prize be instituted for best research/project work directed towards the University.

Item No.Q3.4.05: <u>Setting up Student Quality Council.</u>

The draft Master Action Plan had prioritized establishing a Student Quality Council. It is now proposed that such a council be formed with Departments Union Chairman as Chairman with following members: *Chairman, Research Union; Second year masters student of each school who has secured maximum CGPA in the first semester; One foreign student and one physically challenged student to be nominated by the Vice-Chancellor.* The IQAC may approve.

> *Decision:-* The IQAC resolved to approve the proposal.

Item No.Q3.4.06: <u>Establishing Idea Boxes.</u>

As a part of promoting all stake holders of the University to contribute ideas for continuous improvement of the University system, it is proposed that IQAC place "Idea Boxes" (as suggested by Dr. K. S. Chandrashekhar in the first meeting) in key locations in Palayam Campus & Karyavattam Campus. IQAC may approve.

> *Decision:-* The IQAC resolved to approve the proposal.

Item No.Q3.4.07: <u>India Today University Ranking – Reporting of Data Submission.</u>

The data for ranking our University, sought by India Today has been submitted on time, based on 2014-15 AQAR and also other data readily available. The matter is reported to the IQAC

Decision:- IQAC noted the matter

Item No.Q3.4.08: <u>Proposal for Compiling Research Regulations & Rules handbook.</u>
The regulations for research has been amended from time to time and many applicable University Orders also have seen issued from time to time. Therefore it is proposed that they may all be compiled into a convenient handbook to enable easy reference. A committee may be constituted to do the same. IQAC may consider the matter.

Decision:- IQAC resolved to defer the matter.

Item No.Q3.4.09: <u>Department level quality plans</u>
The Department level quality plans have been compiled and shall be tabled at the meeting. The IQAC may decide next course of action.

Decision:- The compilation was tabled and the council resolved to seek action taken reports from departments in December.

Item No.Q3.4.10: <u>Printing of University Brochures.</u>
The committee appointed by IQAC to compile and edit the University brochure has now completed the work and it is proposed that the brochure be printed for distribution during the induction programme. The current years budget speech has announced Rs. 10 lakhs for activities. It is proposed that the amount may be used to print brochures for distribution at the induction programme.

Decision:- The Council resolved to go in for multi-color printing, following the established procedure.

Item No.Q3.4.11: <u>Proposal for a book on "Readings in Research Methodology".</u>
As more and more importance is being given to PhD course work, there is a need to have a book on research methodology. It is proposed that such a book be compiled with authors from faculty, retired faculty and also external experts and published by the University Publication division. IQAC may advice action.

Decision:- The Council approved the proposal and entrusted the VC to constitute a committee to lead this.

Item No.Q3.4.12: <u>Attracting Research Funding- Compilation of a handbook.</u>
It is felt that younger faculty may find it useful to have a handy reference on attracting research funding (listing organizations, agencies and schemes which provide funding, along with procedure of University of Kerala regarding submission, processing of such proposals). IQAC may constitute a committee to lead this compilation.

Decision:- The Council approved the proposal and entrusted the VC to constitute a committee to lead this.

Item No.Q3.4.13: <u>Data collection on Journals published by Departments.</u>
The editorial policy, periodicity, technical details, on-line availability etc., of the journals published by various departments is not compiled so far. Such a compilation will pave way to identify lacunae and improve quality. IQAC may approve the data collection.

  Decision:- The Council approved the proposal.

Item No.Q3.4.14: <u>Implementing ASAP for Department students.</u>
The additional skill acquisition programme of Government of Kerala is successfully running in various affiliated colleges and Higher Secondary Schools (HSS) providing soft skills and job skills to students. The Director IQAC visited the ASAP Head quarters and held discussions to explore if the facility can be availed in Kariavattom Campus. It is learnt that PG students are not presently under ASAP's ambit. The director IQAC further discussed the matter with Dr. K.M. Abraham, Additional Chief Secretary who indicated that the matter may be formally taken up. The IQAC may advice.

  Decision:- See decision on next item.

Item No.Q3.4.15: <u>Promoting Foreign Language training (first component of USAP)</u>
As a supplement to ASAP at University level, University of Kerala may consider launching a "Universal Skill Acquisition Programme" (USAP). A full fledged proposal for the same can be drawn up separately. However, it is felt that without any further delay one component of USAP can be launched from the academic year 2015-2016-foreign language training. Preliminary discussions have been held with Goethe Centrum. IQAC may advice actions.

  Decision:- The Council considered items 14 and 15 together and discussed in detail the need to provide additional training to post graduate students, suitable at their level of education. It was resolved that Director IQAC shall put up detailed project on USAP for seeking funding. To serve the incoming batch, it was resolved that couple of courses should be started before finalization of the whole scheme. The sub-committee of the IQAC was authorized to design and implement this in consultation with the Vice-Chancellor. It was also resolved to promote the 'training the trainer' scheme of ASAP among PG students.

Item No.Q3.4.16: <u>Inter- University Credit Transfer at State level</u>
The University of Kerala is one of the first state Universities in the country to legislate credit transfer and successfully implement it with American Universities and colleges (See Regulations in Appendix-2). The concept of credit transfer and student mobility is however yet to become visible and popular among academic community in the state. Therefore, an innovative Inter-University Collaboration putting into practice credit transfer & student mobility, is proposed for consideration of IQAC. This aims at preparing Universities for futuristic flexibility and creating visibility for credit transfer system within Universities. The scheme is illustrated bellow through a hypothetical example
- University of X offering a master programme in subject Y with comparable syllabus is to be identified for collaboration
- Both University of Kerala and University of X announce the programme jointly, but receive applications and admit students independently, as per their rules.

- In the second semester, students from University of X are encouraged to apply to University of Kerala and Vice-versa for doing a semester of courses in the respective University. For this, credit transfer regulations need to the adapted in University of X (if not already adapted) based on the University of Kerala Regulations. Both Universities have to also design application forms, prescribe fees for credit transfer and also course fees for single semester for the visiting students (which could be same as semester fee of own students)
- When the students complete one semester in the receiving Universities, they are to be given credit transfer and they return to the home university and apply for integrating into their academic transcripts (Please see the mock sample enclosed as Appendix-3)
- There is no need to sign an M.O.U between Universities, but it would be nice to have a meeting of authorities from each side, to give this programme a momentum.

> ***Decision:-*** The IQAC observed that this is a novel scheme to promote student mobility and to provide variety of exposure and in future can be extended to national institutes of repute like IITs. The Vice-Chancellor was authorized to act on starting this with a partner University of Kerala in a small way, this academic year itself.

Item No.Q3.4.17: <u>University's Participation in Shodhaganga/Shodhgangothri Project.</u> Generally the quality and visibility of a university in the present knowledge world hinges on the availability of scholarly documents produced by the university in the open domain. Top universities of the world are providing open access to even their class rooms. The UGC's Information and Library Network Centre (INFLIBNET) which provides online journals and resources to the universities, launched Shodhganga ([shodhganga.inflibnet.ac.in)](shodhganga.inflibnet.ac.in) in 2010. It is a the repository for the Indian Ph.D. theses made available to the entire scholarly community in open access. The repository has the ability to capture, index, store, disseminate and preserve the theses submitted by researchers. Kerala University signed an MOU with INFLIBNET in 2012.(Appendix-4). Later, Sodhgangotri, a repository of Indian research in progress (Synopses/Research Proposals for PhD programme) has been launched. [(shodhgangotri.inflibnet.ac.in)](shodhgangotri.inflibnet.ac.in). Both encouraging to upload the pdf version of the docs. A PDF-A format is generally advised.

Around 216 universities have contributed to the project so far and this online space now has 38000 plus theses and 1900 plus synopses in it. Kerala University has an account in Shoudhganga where 83 theses are found in it. The first upload to this account was on 13th of August 2012 and the last one was on 12th of February, 2015. Among the 83 theses available in this account 56 were uploaded in 2013. Among 216 participating universities, our contribution is not at all impressive. Among the top participating universities, 3 are from Kerala (MG university-rank 3 with 2037 docs; CUSAT ranks 7 with 1438 docs and Calicut University ranks 17 with 575 docs). There is also no contribution from affiliated institutions of our University except TKM College of Arts and Science (2 contributions). The total no of thesis accepted by the University of Kerala recently are 2012 -375, 2013 – 530, 2014 - 269. This shows that only about 8% of theses have been uploaded. M.G University seems to have uploaded even past theses after digitalization. Currently all research students are submitting PDF copies, but no system seems to be effectively in place

and no monitoring seems to be done either. It is therefore proposed that the process be streamlined and back up of updation be cleared in a months time. Also all Departments

may be asked to collect PDF of masters thesis current batch and upload them in Shodhgangothri. Each Department may be asked to send a compliance statement. The affiliated colleges may also be requested to take part vigorously. A poster is proposed for awareness campaign.

The cases where soft copies are not available the scans of print version can be used to make pdf. In such cases care must be taken to properly tag it to maximize its visibility. If possible, we must try to make it completely searchable with the help of an OCR tool. Proper tagging are to be done while uploading a doc to the cyber space. The visibility can be enhanced by linking the docs in the university website. The IQAC may advice action.

> ***Decision:-*** The IQAC observed that there is a grave failure in not attending to uploads of PhD thesis. It was resolved that Director, KUCC (who shall be provided with DEOs on a work arrangement basis) in co-ordination with KUL and PhD section will complete upload of PDFs of last 2 years immediately. Department librarians shall ensure upload of master's thesis from this year onwards. IQAC may take necessary steps towards this.

Item No.Q3.4.18: <u>Monitoring and analyzing OPAC logins.</u>
An **online public access catalog** (**OPAC**) is an online database of materials held by a library or group of libraries. Users search a library catalog principally to locate books and other materials available at a library. OPAC login analysis is a criteria for accrediting agencies and also a means of monitoring effective use of library resources by students and researchers. A preliminary enquiry reveals that such a monitoring is absent in University of Kerala, though the facility is available (Appendix-5). The supplier of the software may be asked to implement server settings such that a monthly OPAC Analytics is produced and made available to IQAC. This will be a great way to monitor library usage. IQAC may advice

> ***Decision:-*** Director KUCC may ensure proper server settings. Technical/human resources required for this may be provided to Director KUCC by the Registrar.

Item No.Q3.4.19: <u>Compiling Research Summaries</u>.
In the last meeting, during discussion of exit report, suggestions regarding compiling research summaries came up. A sample summary has been made and given in Appendix 6. If IQAC approves, then a circular calling for the data may be made. Making this mandatory for issuance of provisional certificate for PhD may also be done.

> ***Decision:-*** The council appreciated the utility of such a compilation to reach out the research findings to potential users and to enable its use. The proposal to collect it from all PhD awardees, as proposed, was approved.

Item No.Q3.4.20: <u>Compiling Faculty Research Profile</u>
To enable consultancy and also to enable visibility, the brief research profile of all faculty members is proposed to be compiled. The KSHEC is understood to be planning to seek such

information from all Universities and hence this compilation will also be useful in that context. The form for the same is appended as Appendix A7. IQAC may approve.

Decision:- The council approved the proposal.

Item No.Q3.4.21: <u>Any other item permitted by the Chair</u>

(a) Sri John William informed the council of unfortunate student dropouts from campus due to financial burdens and sometimes stress. Dr.K.S.Chandrasekhar and Dr. M.Jayaprakas proposed the idea of the Vice-Chancellor's benevolent fund with 80 (g) tax exemptions. The council entrusted the sub-committee to make a detailed proposal in this regard. The question of providing service of student counsellors is also to be explored.

(b) The details of tier-1 of the 3-tier induction programme on August 5th 2015 was discussed and resource persons suggested. The Director IQAC was also authorized to conduct a student survey on the occasion to gather information to plan student support progammes.

Appendix A1

	Committees to Draft Policies/Charters etc
1	**Vision & Mission Statement:** Dr. J. Prabhash (Political Science), Dr. Rezia Begum (Commerce), Dr. Suneesh C.V (Chemistry)
2	**Attributes of Graduates:** Dr. Achuthsankar S. Nair (Bioinformatics), Dr. Jayasree E.G. (Chemistry), Mr. John Willimas, Dept. Union Chairman
3	**Quality Policy:** Dr. K.S. Chandrasekhar (IMK), Dr. Saja K. (Biochemistry), Dr. K.G. Gopchandran (Optoelectronics)
4	**Extension Policy:** Dr. S.Venumohan (Distance Education), Dr. Shaji A. (SDE), Manju.V.N. (Maths)
5	**Library Policy:** University Librarian, Dr. Mini Devi (Library), Dr. Rejani.R.S (Oriental)
6	**Open Source Policy:** Dr. K. Satheesh Kumar (Future Studies), Dr. Aji (Computer Science), Dr. Yamuna.A. (Optoelectronics)
7	**Cyber Policy:** Dr. Vinod Chandra.S.S (Computer Centre), Dr. Manoj Changat (Future Studies), Dr. M.N Mubarak (Computer Science)
8	**Creating & Enhancing Infrastructure:** Dr. Mini Dejo Kappen, Dr. A. Bijukumar (Aquatic Biology), Dr. S. Mini (Biochemistry)
9	**60+ Policy:** Dr. Suresh Jnaneswaran (History), Dr. Binoj Kumar (Geology), Dr. Meena. T. Pillai (English)
10	**Gender Policy:** Dr. G. S Jayasree (English), Dr. Sindhu Thulaseedharan (Law), Dr. Sidik. R (Economics)
11	**Green Charter:** Dr. P.M Radhamani (Botany), Dr. R. Vasanthagopal (IMK), Dr. M.S. Jayakumar (Sociology)
12	**Student Charter:** Student Syndicate Member, Dept Union Chairman, Dept Union Advisor
13	**Citizen Charter:** Dr. G. Raju (Commerce), Dr. Sharafudeen. S (Islamic Studies), Smt. Preethy. K (Demography)

Appendix A2

UNIVERSITY OF KERALA
Thiruvananthapuram, Kerala, India - 695034
<u>(Abstract)</u>

Regulations for Credit Transfer into and out of the University's Academic Programmes -
- Approved - orders issued.

ACADEMIC'D' SECTION

No. Ac D/1/80160/2014   Dated,Thiruvananthapuram, 27.1.2014

Read.

1. Item No.1.12 of the minutes of the meeting of Executive Committee of the Centre for International Academics (CIA) held on 18.10.2012.
2. Item No.14:152 of the minutes of the meeting of the Syndicate held on 03.11.2012
3. Item No.3 of the minutes of the meeting of the Academic Committee for CSS held on 25.07. '13.
4. Item No.22:81 of the minutes of the meeting of the Syndicate held on 27.07.'13
5. Item No.41 of the minutes of the meeting of the Academic Council held on 07.11.2013

ORDER

The Executive Committee meeting of the CIA vide paper read as (1) above had recommended to authorize the Director, CIA to prepare a detailed regulation for Foreign Students desirous of joining the Post Graduate and Post Masters Programme in the University of Kerala. The recommendation of the Executive Committee was approved by the Syndicate vide paper read as (2) above.

Accordingly, the Director, CIA, had submitted the draft regulations for Foreign Students desirous of joining the Post Graduate and Post Masters Programme in the University of Kerala and Regulations for Credit Transfer into and out of the University's Academic Programmes. The and Regulations for Credit Transfer into and out of the University's Academic Programmes was placed before the Academic Committee for CSS vide paper read as (3) above and the Academic Committee recommended to approve the same.

The Syndicate vide paper read as (4) above resolved that the draft regulations be approved and to place before the Academic Council. The Academic Council vide paper read as (5) above has approved the following regulations relating to credit transfer into and out of the University's Academic Programmes as recommended by the Academic Committee of the CSS and approved by the Syndicate:

Regulations For Credit Transfer Into And Out Of The University's Academic Programmes

0. Preamble & Definitions

The University of Kerala has framed regulations for recognizing degrees from other Universities. This regulation is to be considered as a sequel to the above. In this regulations, unless the context otherwise requires.

0.1 'University' means the University of Kerala.

0.2 'Act', 'Statutes', 'Ordinance' and 'Regulations' means respectively the Act, Statutes, Ordinance and Regulations of the University of Kerala.

0.3. Faculty, Dean, Board of Studies, Head of the Dept respectively means the Faculty, Dean, Board of Studies, Head of the Dept defined in the statutes of the University of Kerala.

0.4 'Department' means the University Department of Study and Research established by the Statutes.

0.5 CSS refers to Credit and Semester System for post-graduate programmes

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offered by the Departments of the University.

0.6 Grading Systems, Grades and Grade Point Averages refer to Grading Systems , Grades and Grade Point Averages defined in relevant regulations of the post-graduate programmes offered by the Departments of the University.

0.7 Credit Transfer/Accreditation of Prior Learning shall mean recognizing selected individual courses in a degree programme of an external University and reckoning the corresponding credits for award of a degree of University of Kerala or vice versa.

1 **General:** This regulations shall be applicable for all credit based programmes at postgraduate level of the University of Kerala and sets forth the procedure for transferring credits from an external University programme into a programme of the University of Kerala and vice versa.

2 **Grading System.** Various programmes in University of Kerala report student assessment results in various ways. In case grades are awarded for each course, they shall be used as such in credit transfer certificates. In case they are given in marks, they shall be converted to grades as per the grading system used for assigning grades for aggregate marks in CSS programmes of the University of Kerala, which is as follows:

Marks of 90% and above	E
Marks of 75% and above & less than 90%	A
Marks of 60% and above & less than 75%	B
Marks of 50% and above & less than 60%	C
Marks less than 50%	F

3 **Grade Statistics:** Proper interpretation of grades awarded by University of Kerala requires the grade distribution statistics to be provided in the Credit Transfer Certificate. The CSS Academic Committee shall approve such statistics for each year, based on consolidated mark sheets of each Department.

4 **Credit Transfer from University of Kerala:** On application in the prescribed manner paying prescribed fees fixed by the syndicate from time to time, a credit transfer certificate (Schedule –I) shall be issued or credit transfer transcript communicated to any institution in the world for any bonafide student of University of Kerala for any course of any semester of a Programme offered by the Departments of the University of Kerala, for **which a grade not less than C** has been obtained by the applicant. The CGPA of the semester concerned or for the whole programme shall not be criteria in issuing credit transfer certificate for a particular course. The credit transfer certificate shall include the following details:

1) Name of programme & duration

2) Eligibility for admission

3) Semester, Course code, Course Title and credits earned and grade(s) awarded for concerned course(s)

4) Nature of Course Delivery

5) Grades earned

6) Brief explanatory note on Credit hours and grading system used by University of Kerala and most recent grade statistics.

7) Certified syllabus of the course

8) Any other remarks

5.0 Transferring credit from another University into a programme of the University of Kerala

5.1 There shall be a **Credit Transfer Committee** which shall be competent to recommend the transfer of credits into a programme of the University of Kerala. The committee shall meet, physically or virtually, every month. The recommendations of the CTC shall be placed for approval in Academic Council.

The Credits Transfer Committee shall consist of the following members.

1) *A Professor nominated by the Vice-Chancellor (Chairman).*

2) *Dean of the Faculty concerned*

3) *Chairman of the Board of Studies concerned*

4) *Head(s) of the Dept. of the concerned subject /allied subjects.*

The Credits Transfer Committee shall consider the following parameters in recommending credit transfer for each course of an external university and it shall be the responsibility of the applicant who desires credit transfer to provide certified information along with prescribed application form and prescribed fees as fixed by the syndicate from time to time:

1. Whether the programme is already recognized by this University

2. Aims and objectives of the programme and the specific course

3. Eligibility of admission to the programme

4. Pre-requisites of the course for which credit transfer is requested

5. Course content

6. Methods of Assessment

7. Credit hours

8. Nature of course delivery

9. Grades earned by the applicant in the particular course

10. The nature of the grading system of the concerned University and grade distribution statistics, if available. Where grade distribution statistics is not available, the grade awarded by the external University shall be mapped to the grades of the University of Kerala, limiting the best grade to the most frequently awarded grade in the University of Kerala as per approved grade statistics.

11. Concurrency of knowledge (no programme in science & technology that has been undertaken more than 4 years ago shall be considered and the limit shall be 8 years for all other subjects).

2. The grading system of the University of Kerala for masters programme in the University Departments grades overall performance as follows: Marks of 90% and above - **E**; Marks of 75% and above & less than 90% -**A**; Marks of 60% and above & less than 75% -**B**; Marks of 50% and above & less than 60% -**C**; Marks less than 50% -**F**

3. The statistics of grades awarded during the last examination band (2010-2012) are as follows: E-4%, A- 38%, B -47%, C-11%

Sanction has therefore been accorded by the Vice-Chancellor that the Regulations for Credit Transfer into and out of the University's Academic Programmes as detailed above being implemented.

Orders are issued accordingly.

Sd/-
R.Dilip
Deputy Registrar (Acad. I)
for Registrar

Copy to:
1. The Director, CIA
2. Vice-Chairman, CSS
3. All Heads of Departments
4. PS to VC / PVC
5. PA to Registrar/CE
6. DR(CSS)/DR(Plg)
7. Pl.D
8. Stock File / File Copy.

Forwarded / By Order

Section Officer

Appendix A3

Kannur University
MSc computational Biology

M.Sc. Syllabus Programme Structure				
	Course Code	Course Title	Credits	Grade
Semester 1	KNR 101	Introduction to Life Sciences & Bioinformatics	4	A
	KNR 102	Applied Mathematics	4	A
	KNR 103	Web programming and Databases	4	A
	KNR 104	Bioinformatics Lab I	3	B
	KNR 105	Python Programming (E)	2	A
	KNR 106	Seminar I (E)	2	B
	KNR 107	Programming in R (E)	2	A
	KNR 108	Soft skills and Life skills (E)	2	A
Semester 2 (By Credit transfer from University of Kerala)	COB 201	Creativity, Research & Knowledge Management	4	A
	COB 202	Fundamentals of Molecular Biology	4	A
	COB 203	Computational Genomics	4	A
	COB 204	Bioinformatics Lab II	3	A
	COB 205	Perl and BioPerl (E)	4	A
	COB 206	Case Study (E)	2	A
	COB 207	Android App Development for Bioinformatics(E)	2	A
	COB 208	Negotiated Studies(E)	2	A
Semester 3	KNR 301	Proteomics and CADD	4	A
	KNR 302	Phylogenetics	4	A
	KNR 303	Advanced Topics in Computational Biology	4	B
	KNR 304	Bioinformatics Lab III	3	A
	KNR 305	DSP and Soft Computing (E)	4	A
	KNR 306	Mini Project (E)	2	B
	KNR 307	Big Data Bioinformatics(E)	2	B
Semester 4	KNR 401	Project and Viva Voce	15	A
	KNR 402	Innovative Project and Viva Voce	17	A
	KNR 403	Seminar II (E)	2	B
	KNR 404	Research Proposal Preparation (E)	2	A
		CGPA	7.2	
		Letter grade	A	

MOCK Transcript

Appendix A4

This Memorandum of Understanding (MoU) is made and entered into on 15 (Day) JULY (Month) 2012 (Year) between the INFLIBNET Centre, an IUC of University Grants Commission located at Ahmedabad, hereinafter referred to as "INFLIBNET" and UNIVERSITY OF KERALA (University / Deemed University / Inter-University Centre), here in after referred to as the **'University'**.

WHEREAS, INFLIBNET Centre, an Inter-university Centre of the University Grants Commission, as its mandate, promotes open access to scholarly content generated in universities. The Centre has computers, network, software infrastructure and technical know-how required for hosting electronic versions of theses and dissertations in open access with interface to search, retrieve and access these content.

WHEREAS UNIVERSITY OF KERALA (University / Deemed University / Inter University Centre) has agreed to take part in the process of digitisation of old theses and dissertations (not available in computerized machine-readable format) and building-up of digital repository and to promote, share and host its ETD in 'Shodhganga: A reservoir of Indian theses submitted to the Universities in India' and other universities in open access. 'Shodhganga' is a name coined by INFLIBNET Centre for refering to the respository of Indian Electronic Theses and Dissertations. The word "Shodh" originates from Sanskrit and stands for research and discovery. The 'Ganga' is the holiest, longest and largest river in Indian subcontinent which has held heart of its people captive and drawn millions of people to its banks since the dawn of history. The Ganga is the symbol of India's age-long culture and civilization, ever changing, ever flowing, ever loved and revered by its people. "Shodhganga", a repository of theses and dissertations submitted to Indian universities, is expected to keep growing to a formidable size as more and more researchers from India submit their research works to this ever growing reservoir.

This Memorandum of Understanding (MoU) defines responsibilities, liabilities and commitments of the institutions involved to ensure proper system implementation, to meet the objectives pertaining to submission and access to Electronic Theses and Dissertations as envisaged by the UGC vide its Notification (Minimum Standards & Procedure for Award of M.Phil/Ph.D Degree), Regulation, 2009 dated 1st June, 2009.

NOW, THEREFORE, in consideration of the mutual agreements herein contained, INFLIBNET and the University agree to the following terms and conditions:

I.   **INFLIBNET Centre**
   1. Provide access to ETD hosting server(s) at the INFLIBNET Centre 'Shodhganga' to the University with accompanied software interface enabling University / its student to create metadata and upload their theses and dissertations in ETD repositories designed for this purpose. The INFLIBNET will take the responsibility of keeping the data intact and usable, keep back-up of the

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data so as to avoid its loss. The INFLIBNET will deploy tools and techniques of digital preservation to ensure continuing access to scholarly content in digital formats and to protect them from media failure, physical loss and obsolescence.

2. Recommend to the UGC to extend financial assistance to the Universities under Sections 12(B) and 2(f) of UGC Act for digitization of theses and dissertations not available in computerized machine-readable format and / or for procurement and installation of a suitable computer system / infrastructure for creation of ETDs.

3. Provide configuration of system, specifications and technical guidance to the University for procurement of computer hardware and related systems for setting-up of ETDs.

4. Provide guidelines, technical standards and specifications for digitization of Ph.D. theses submitted to the university in past and for theses not available in computerized machine-readable format.

5. Impart training to at least one person from the university (from library field and / or from computer field) in creation, updation and computerized operation of digital repositories of ETDs especially on 'Shodhganga'.

6. Extend access to an anti-plagiarism software or provide services to evaluate theses for possible plagiarism and submit a report to the concerned university.

7. The INFLIBNET may refuse to host any material deemed by the INFLIBNET to be controversial in nature or is in violation of copyright act.

8. This right of refusal will not relieve the University / Ph.D. scholar of liability, both to INFLIBNET and to the public, for matter contained in the theses that may be libelous or actionable and to both INFLIBNET and copyright owners for copyright infringement by the Ph.D. Scholar.

9. The INFLIBNET Centre will not be responsible for i) errors, omissions, inaccuracies and quality of content or misinformation or for any damages caused to the user or any third party from the use of content provided in the theses; ii) safety and archiving of loaded content in cases of "force measure" including natural calamities; and iii) printed version of theses.

10. INFLIBNET Centre will recommend or provide access to plagiarism software which university may use to detect plagiarism before awarding the degree.

11. The INFLIBNET Centre replicates the content of theses and dissertations on different server and other auxiliary storage media. However, the INFLIBNET Centre does not take the responsibility for the archiving or backing-up of loaded content. The universities, therefore, should also keep a back-up of their theses and dissertations.

II. The University

1. The University would grant non-exclusive worldwide license to the INFLIBNET Centre for hosting and distributing their theses in digital format in 'Shodhganga' or any other server designated for this purpose.

2. The University / its researcher scholars agree to host / upload a computerized machine-readable file in mutually agreed format of all theses on to the 'Shodhganga' server at the INFLIBNET.

3. The University will not hold INFLIBNET Centre responsible for any errors and omissions contained in the original theses.

4. The University commits to digitize theses and dissertations and their bibliographic records submitted to the university and provide necessary infrastructure including manpower support for operation of ETDs.

5. Commits to utilize the assistance provided by the UGC on recommendation of the INFLIBNET for implementation of ETDs including their digitization.

6. Deputes at least one person from the university (from library field or from computer field) for undergoing training on implementation of ETD organized by the INFLIBNET and ensure that the person trained by INFLIBNET on ETD is / are deployed for the same job.

7. Arranges to provide training to research scholars or users of its library and staff of colleges affiliated to University in creation of electronic version of theses and their deposition in the ETDs.

8. Ensures use of standard software and metadata schema suggested / provided by the INFLIBNET for setting-up / development / operation of its ETDs .

9. Creates bibliographic records of all theses and dissertations submitted to the university in standard bibliographic formats prescribed by the INFLIBNET Centre from time-to-time and contributes these records for inclusion in the INFLIBNET's Union Catalogue (IndCat).

10. Commits to sharing of library ETD resources / databases with the INFLIBNET Centre as well as with other universities.

11. The University would agree to host their ETDs in the digital repositories 'Shodhganga or other servers' set-up at the INFLIBNET Centre, and grant non-exclusive licence to the Centre to make electronic version of theses in full-text (theses that are born digital as well as those that are digitized using scanners / digital cameras) accessible through open access ETD.

12. The University shall not use electronic version of theses digitized using funds given by the UGC for any commercial purposes. The University shall not rent, sell or license the use of or deliver or release or otherwise part with the possession of the systems / software or the INFLIBNET ETDs databases, Shodhganga or any part thereof to any other party (individual, institution, organization, etc.)

13. The University will also commit their own funds or grants for fulfillment of the project, if the project on implementation of ETDs demands more resources and funds to complete it.

14. The University will use the plagiarism software recommended by the INFLIBNET and made accessible to test the thesis submitted by the student for plagiarism before awarding the Degree. If the university is not subscribing to such software, it will use the software from the nearest Regional Centre, if any.

III. **Termination**

Both, the Parties, will have rights to terminate the MoU at any time in case of breach of obligations and terms and conditions of the MoU. This MoU signed hereunder may be terminated by either party at anytime upon ninety (90) days prior written notice. Upon termination of this Agreement, the INFLIBNET / University will stop hosting their theses immediately while keeping the theses already deposited by the University in its archives for its users. The University shall stop using the INFLIBNET's ETD facilities and databases and return any software / hardware or digitized content provided by or through the INFLIBNET, back to INFLIBNET within the 3 months notice period.

IN WITNESS WHEREOFF, the parties hereto executed this MoU on this date above mentioned.

UNIVERSITY:

Vice Chancellor / Registrar
or designated authority.

(Name, Signature and Seal)
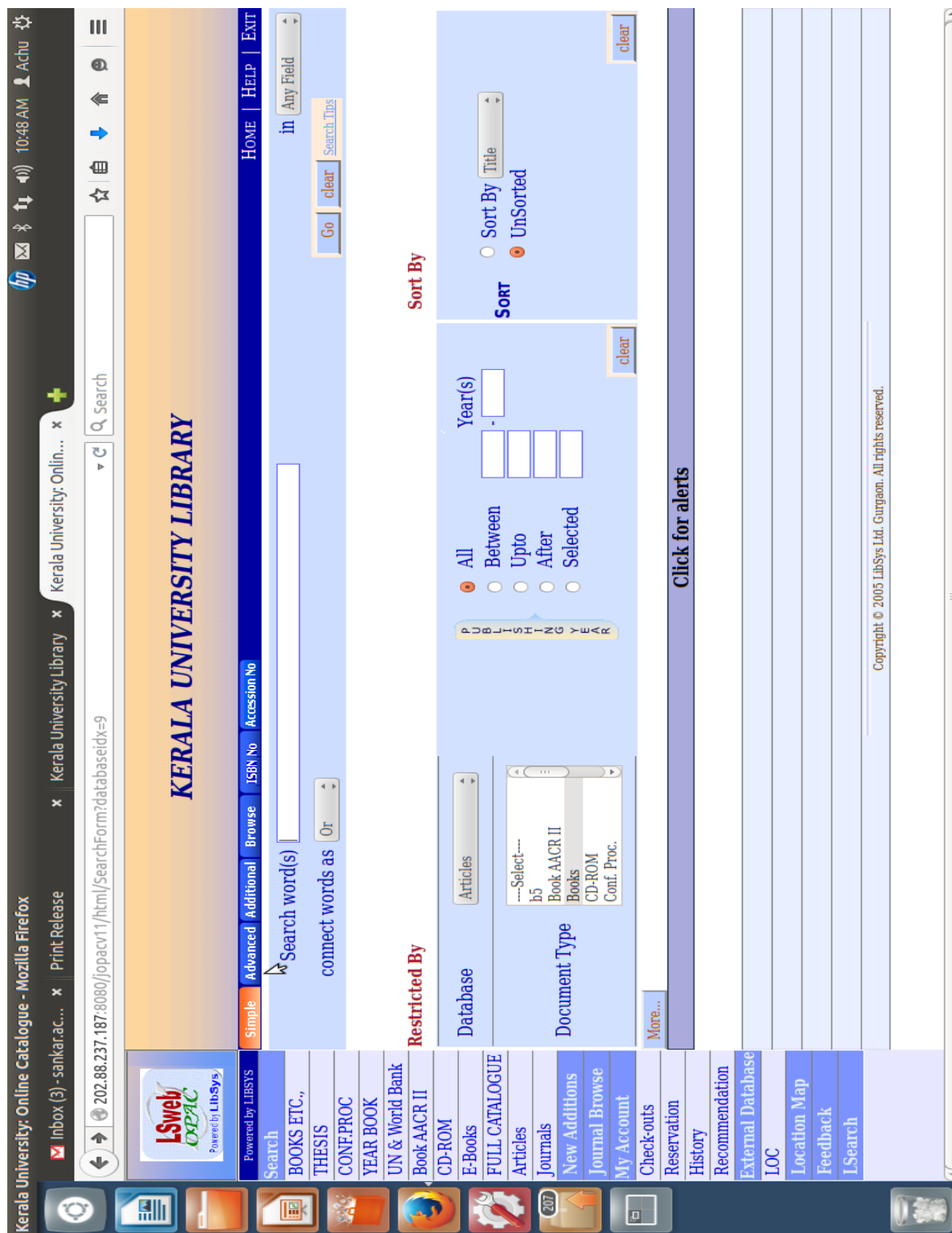
P. RAGHAVAN.
REGISTRAR
JOINT REGISTRAR
IN-CHARGE

INFLIBNET:

Dr. Jagdish Arora,
Director,
INFLIBNET Centre,
An IUC of University Grants Commission,
Gujarat University Campus,

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Appendix A5

Appendix A6
Sample Summary Compilation

Title: Phytochemical Evaluation and Identification of Active Principle(s) in *Azima tetracantha.* Lam. (Salvadoraceae)	
RESEARCHER: Gayathri G.	GUIDE: Dr. Bindu R. Nair
SUBJECT: Botany	

Azima tetracantha Lam.is a traditional herbal medicine used in the villages of South Kerala. The leaves are prescribed to women after childbirth for early and effective contraction of uterine muscles. The plant is reported to have antispasmodic, diuretic, analgesic, anti-inflammatory, stimulant, anti-diabetic, anti- arthritic, anti-rheumatic effects. The current study attempts to investigate the phytochemical profile of the leaves, through the evaluation of its pharmacological activities. The leaf powder showed could be used as a drug as it showed desirable physico-chemical characteristics. The powder was noted to be a rich source of minerals. The leaf powder showed high Potassium content while toxic compounds such as lead was completely absent. Also the leaf powder had high amounts of nutrients but very limited quantity of antinutrients. Qualitative and quantitative analysis exposed the methanol extract to possess most of the phytoconstituents tested. Moreover, the methanol extract showed significant antimicrobial activity, antioxidant property and antiproliferative activity. The bioactive extract from the leaves of *A. tetracantha* when subjected to chromatographic as well as spectroscopic techniques, resulted in the isolation and characterization of a triterpenoid, friedelin (m.p. 261- 263°C) in appreciable quantity,. Thus the present study reports the isolation and characterization of friedelin from the leaves of *A. tetracantha* for the first time from Kerala.

Keywords: *Azima tetracantha* Lam., Physico-chemical analysis, Pharmacological evaluations, Phytochemical screening, Friedelin

Major publication appeared in: *International Journal of Pharmaceutical Sciences*
Total no. of pages in the thesis: 223, **Total No of reference cited in the thesis**: 327
Email of Researcher:gaya3uty@yahoo.com

Title: Newspaper Malayalam over the years – A linguistic study	
RESEARCHER : Rejitha K. S.	GUIDE : Dr. S. A. Shanavas
SUBJECT: Linguistics	

The study encompasses the chronological development of the Malayalam newspaper language transmission and implementation by the synchronic and diachronic analysis over the past decades. Newspaper language in Malayalam was analyzed linguistically in terms of lexical, syntactic, phonetic, morphological, semantic, grammatical, phonological norms.Linguistic variation is not random but socially conditioned i.e. influenced systematically or correlated with nonlinguistic parameters. Changes in linguistic norms are usually appeared in media because it exhibit present events. Newspaper language changes are happened mainly in word level such as morphological, word formation, syntactic and semantic uses.With the influence of other languages Malayalam vocabulary extended, some lexical items exited and destruct the grammatical rules. The main contribution of newspapers is the language should be simple, precise, creative etc.

Keywords: News, Newspaper, Malayalam Newspaper, Lexical.

Major publication appeared in: Nil

Total No of pages in the thesis: around 200, **Total No of reference cited in the thesis**: 110, **Email of Researcher**: ksrejitha@gmail.com

Title: Computational Modeling Approach to Synthetic Biology	
RESEARCHER: Umesh P.	GUIDE : Dr. Achuthsankar S. Nair
SUBJECT: Computational Biology and Bioinformatics	
The present work addresses the Genetic Design Automation (GDA) platform aimed at useful applications. The aspect of engineering and characterization comprises the first stage of the work. This study proposes a polymerase independent algorithm, which can predict whether a given DNA fragment is a promoter or not, based on the sequence features and statistical elements. The characterization of promoter strength by merely using the sequence has also been discussed. The second part of the work is the development of a programming platform for synthetic biology - Kera. Kera is a Domain Specific Language that can help to automate the process of genetic circuit design. A model definition language, programming platform and scripting language are the key components of Kera Platform. Genetic construct can be written in textual form by using the Kera model definition. The model defined in Kera model definition language can be compiled and executed by using the Rule base of Kera. The Graphical User Interface helps non-programmers to write programs for biological applications. The investigator has developed modules for codon optimization, interaction prediction, and support for other data exchange platforms like SBOL and other sequence editing features. This ensures Kera to be a one window platform to meet synthetic biology needs. An in-built simulation engine that can be used for analysis, simulation and mathematical modeling of genetic constructs was also developed. The Knowledgebase helps a user to avoid unnecessary interactions while designing genetic constructs. **Keywords**: Computational Synthetic Biology, Genetic Circuit, Genetic Design and Automation, Promoter prediction, High level language for Synthetic Biology	

Major publication appeared: *Systems and Synthetic Biology (Springer)*
Total No of pages in the thesis: 159, **Total No of reference cited in the thesis**: 99
Email of Researcher: toumesh@gmail.com

Title: Coinage and Use of Technical Terms in Malayalam - A Linguistics Analysis with Respect to the Localization	
RESEARCHER: Saritha.S.L	GUIDE: Dr. S.A Shanavas
SUBJECT: Linguistics	
Technical term is the specialized vocabulary of a field. The term which stands for ideas relates to technical issues. Now the technical terms are seen mostly in English Language. Due to the localization process, these terms have to be translated to the local languages like Malayalam for the accessibility of all sections of people in the society. By means of translation process some of the technical terms can be translated to Malayalam.One of the main issues with respect to technical terms in Malayalam is the less productive nature. Due to this the language is not growing as compared to the neighboring languages.Present work clearly shows that localization process is not successful in Malayalam because localization is depending on the attitude of the people who use these terms. On the other hand if Technical terms are localized it will increase the usage of local applications as well as improve the computer literacy. Many attempts were made to coin computer terminology in Malayalam. In the case of Malayalam, English language influenced in many ways. Sometimes unable to get	

the equivalent native word. Vocabulary of Malayalam constantly had been enriched not just by coinages but by borrowing as well. Malayalees continue to have a great fascination for English even to the extent of neglecting Malayalam.

Keywords : standardization, coinage, localization,terminology

Title: WORD FORMATION IN MALAYALAM	
RESEARCHER: Sajila S	GUIDE: Dr. S. A. Shanavas
SUBJECT: Linguistics	

This research is a detailed analysis of types of word formation in Malayalam and formulates the word formation rules. The work concentrates on morphological analysis of nouns, verbs, adjectives and other categories. Major grammatical categories like noun, verb, adjective, adverb and other grammatical forms are formed by different formation process. The Computational morphology concentrates on the analysis of words into morphemes as well as the synthesis of morphemes into words. Computational morphology can be used for various applications including in developing teaching tools for studying morphology. As such a study is rare in Malayalam till date so this study is relevant. Suffixiation and prefixation are the two process of word derivation. I separately listed them and used for morphological analysis and prefix identification so it is helpful for computational Linguistics. But place study not included named entity(place name identification). Following are my findings. In derivational process each category has separate rules. Nouns from noun formation have seven rules and nouns from verb have 5 rules, and nine rules for noun from adjectives. There are 20 suffixes for verbal nouns. For verb formation two main categories are present, verbs from verbs and verb from nouns. For derived verb formation six rules are present. Like that all categories have rules. Following are my findings. *Suffixation is the main derivational process.; Most of the taddhita derivations are Sanskrit loan words.; Most of the derivations change their category.; Derivations from verbs and adjectives are named as nominalization; Derivation is the most productive process in Malayalam which is from nouns from nouns category.; Tatbhava and tatsama process are mainly seen only in Sanskrit loan words.; Adjectives derived from noun category are also more in number.; Adverbs are formed by suffixation.; Post positions are derived from verbs and nouns.; Compound formations by noun + noun are more in number.; Compounding with verbs+auxiliary verbs are productive formations.; Prefixation is totally a borrowed process.; Regarding Word formations in Malayalam clipping, blending, coinage, backformation, acronyms are less in number.*

Keywords: Derivation, Inflection, Compounding, Clipping, Backformation

Title: Biomonitoring of Soil Quality in Thiruvananthapuram District, Kerala using Nematodes as Indicators	
RESEARCHER: Lakshmy.K.S.	GUIDE: Dr.Jaya. D. S.
SUBJECT: Environmental Sciences	

The study aimed to monitor the soil quality of selected rural and urban areas in

Thiruvananthapuram District, Kerala using nematodes as bioindicators. Soil samples were collected from the selected stations in the pre monsoon, monsoon and post monsoon seasons from April 2009 to January 2010 and the physico-chemical parameters, nematode density, diversity index were analysed following the standard procedures. The quantitative estimation of various parameters in the soils of the study stations revealed that all the values of all parameters estimated were within the standard permissible limits. The nutrient content of urban area soils with agricultural activities, industrial activities etc. was found significantly less compared to that of the rural area soils with the same land use patterns. Also the urban area soils were more prone to heavy metal contamination than the rural area soils especially in the gasoline station and road-side stations of Thiruvananthapuram District. Therefore the soil quality with respect to physical and chemical characteristics of urban areas in Thiruvananthapuram District was found to be more degraded compared to that of the rural areas. In the present study, it has been clearly shown that there is heavy metal contamination in the rural and urban areas of Thiruvananthapuram District and is correlated with the degree of industrialisation and intensities of chemical usage. This will also reduce the soil microbial population. The crops cultivated in these contaminated areas in turn may cause health problems to the consumers. So proper remedial measures to check soil contamination should be adopted. The present study reveals that the abundance of nematodes had a direct relationship with the soil physico-chemical characteristics. The nematode abundance diminished in soils with large pore space and high bulk density. Also there is an increase in nematode abundance/density with increase in water holding capacity, moisture content, organic matter content, nitrogen, phosphorus and potassium contents in the rural and urban soils of the study area. It was also found that the nematodes were less abundant in soils rich in heavy metals. These findings validate the potential of nematodes for the bio indication of the soil health status.

Keywords: Rural, Urban, Nematodes, Bioindicators, Contamination

Appendix A7

Form for Faculty Research profile

Name of Faculty Member:

Designation & Department:

Email:

Main Areas of Research Interest:

Subsidiary areas of research interest, including inter-disciplinary areas:

Patents if any (filed or granted):

Key institutional Collaborations:

5 Best Publications (irrespective of year, Science/Applied Science may give number of citations as on date & Impact factor of journal)