

**GOVERNMENT BRENNEN COLLEGE  
DHARMADAM, THALASSERY**

**STRATEGIC  
PLAN  
2020-2025**



GOVERNMENT BRENNEN COLLEGE  
DHARMADAM, THALASSERY-6

# STRATEGIC PLAN

2020- 25

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25/12/2019

The Planning committee of Govt. Brennen College for the year 2019-20 comprising selected faculty members proposed this Strategic Plan 2020-25 based on the platform provided by the previous planning committee suggestions to strengthen the existing state of affairs of the Govt. Brennen College, Thalassery. The present committee started its discussions in July 2019, and started its work with a clear vision: how to reinforce the potency and convert the limitations into strengths in order to make the College a Centre of Excellence.

For practical purposes, the committee drafted two sets of goals: long-term and short-term. Three areas were also identified as the crux points for the implementation of the Strategic Plan: Equity, Excellence and Employability. A formal study was conducted among the stakeholders, and relevant suggestions were incorporated into the drafting of the report.

The final draft was submitted to the Principal and the College council in November 2019. The term-wise points of action were approved by the Council and several of them have been implemented in the campus.

The IQAC and the Planning committee is happy to see that a strategic plan for the next six years is prepared so that at the end of this we could self critically assess how far we have progressed.

We would like to thank all the well-wishers who participated in the discussions and other stages of the study, and who supported us in our endeavor to enhance the quality of our college.

Dr. Unnikrishnan K V  
(IQAC coordinator)

Dr. Chandramohan K T  
(Convener, Planning committee 2019-20)

### PRINCIPAL'S FOREWORD

As a prime centre of higher education in Northern Kerala educating over 2500 students from various kinds of social backgrounds, major number of female students, students from backward districts like Kasargod and Wayanadu, many of them are from SC/ST categories, the Brennen College has to take every step consistent with its mission and vision.

The college has to plan its Objectives and goals and become accustomed itself to the shifting situations so that the paramount in our students and faculty is brought out.

The strategic plan 2020-25 set determined yet to achievable targets based the triad of Equity, Excellence and Employability.

I congratulate the IQAC, Planning Committee and other members of the Brennen College fraternity for working meticulously to formulate this strategic plan. I earnestly hope that with collective effort we would achieve the high goals that have been set.

**Dr. M K Muralidharan Nair**

Principal

Govt. Brennen College, Thalassery

25/12/2019



**COMMEMMORATIVE INSCRIPTION**

This free school was founded and endowed

By

**EDWARD BRENNEN Esq.**

of

Thalassery

“ To give to boys of all

Castes, Creeds and Colour

A sound English Education”

Ever Honoured be his Memory

Opened 1<sup>st</sup> September, 1862

**PREAMBLE**

*The efficacy of education in human development can never be understated. Education is fundamental to every constituent of the society irrespective of gender, physical, racial, economic, geographical, cultural, or linguistic differences. Education is a Nation's Strength. Knowledge is for liberation. Institutions of higher learning need to function as beacons of transformative and empowering knowledge. The motto of the Brennen College is to achieve the three goals of Equity, Excellence and Employability serving the needs of the people for whom it was established.*

## 1. STRATEGIC PLAN: VISION AND OVERVIEW

The Strategic Plan 2020-2025 is concerted at two levels: (i) Improving the teaching/ learning experience in the campus and (ii) strengthening the academic and research domains of the college. Excellence in academics, research and administration will automatically lead to the college becoming a center of excellence, which is the ultimate goal of the Strategic Plan. In order to attain this goal, the Brennen College will set into motion the committed academic and administrative community and focus on catapulting the 127-year-old college into the top notch position in the State and also at the national and international-levels.

In order to achieve this, the committee has formulated a three-point equation, or the “Three Es” of Equity, Excellence and Employability. Equity in education and Excellence in academics will together lead to exceptional levels of Employability. Thus, the entire Strategic Plan is oriented towards the “Three Es”.

The priorities of the Strategic Plan 2020-2025 are:

- Transforming the teaching/learning experience in the campus
  - Setting up Centres of Excellence
  - In-house training courses
  - Infrastructure development
- Strengthening the academic and research domains of the college through
  - Setting up RENU
  - Setting up UAIF
  - Setting up CCBs
- Attaining the three Es of Equity, Excellence and Employability by
  - Transforming the teaching/learning experience
  - Strengthening the academic and research domains

The achieving of the stated goals is possible when the entire college works as a unit, with the vision for a sustainable excellence and a practical understanding of the ground realities. The present state of affairs in the college and the prioritized areas of Strategic Plan are illustrated in the tables for easy reference, and the details of the proposed plan of action and the targets are given after the tables.

## **2. STRATEGIC PLAN: OBJECTIVES AND METHODOLOGY**

### **2.1. Objectives**

The strategic plan and the master plan go hand in hand and the main objective is to augment the existing infrastructure facilities to enhance the facilities along with special emphasis for academics, research, sports and other extra-curricular activities. The focus is on the following core areas:

- **Creation of Improved learning Environment:** It is essential to have adequate and modern class room, laboratories that provide positive learning environment for all students.
- **Developing Enhanced Teaching, Leading and Learning Opportunities:** All students must have access to high-quality instruction.
- **Promote research:** The project aims augmenting the facilities to enhance and promote research.
- **Create a clean, green and safe campus:** In order to facilitate world class learning experience, proper waste disposal methods, biodiversity enriched ambience and disaster free surroundings are essential.

### **2.2. Methodology**

Based on the strategic plan, a master plan of the college is prepared, the methodology adopted for which is described as follows:



Personal interviews and discussions were conducted with the stake holders including college officials, students, alumni, people's representatives, academicians and local people. Site visit and data collection were carried out. The requirements of the colleges were captured and based on the same, the master plan was analysed.

During the site visit, the existing situation of the colleges, in terms of infrastructure facilities, NAAC Accreditation, academic and non-academic excellence were studied and the potential for future growth was discussed with the stake holders. Project report is prepared after reviewing the existing situation, requirements informed by the college officials, need analysis, preparing the detailed design and estimates, cost benefit analysis, *etc.*

## **PART I**

### **The Present Scenario**

#### **1.1. Genesis of the College**

Government Brennen College, Thalassery developed out of the free school established in 1862 by Edward Brennen, a master attendant of Tellicherry Port. It was elevated to the status of a Second Grade College with F.A. Classes in 1890. The institution became a First Grade College in 1947, and it was shifted to the new building at Dharmadam in 1958. College was shifted to the new building at Dharmadam in 1958.

Government Brennen College celebrated centenary in 1990. The Vice President of India, His Excellency Dr.Shankar Dayal Sharma inaugurated the centenary celebrations. Government Brennen College is recognized as a Centre of Excellence by the Government of Kerala. The University Grants Commission had included the college in 12B and 2F Category I.

Today, after celebrating its 100<sup>th</sup> and 125<sup>th</sup> anniversaries, the college proudly bears a rich heritage of pioneering several educational, social and cultural changes, a huge reservoir of alumni spread over the world and a team of faculty who is engaged in quality academic and research pursuits. Government Brennen College is a pioneer institution that promotes U.G, P.G and Research studies in various disciplines like Languages, Sciences, Humanities

and Social Sciences, Commerce and Management Studies. The college is having 21 teaching departments offering UG and PG courses and 8 research centres with 66 approved research supervisors, making the college a strong contender on a par. The College offers Degree courses in 18 subjects and Post Graduate courses in 11 disciplines. The college is also offering research facilities in 8 sectors. This is the only College in Kerala that offers B.Sc. Honours Course in Mathematics. Together, the team of teachers strives to provide quality education to the students, who come from all strata of society, thus fulfilling the vision of its founders.

The Strategic Plan of Action is meant to provide a framework for the activities of the college, so as to maintain the quality that it has always upheld, and to strive for scaling new heights of excellence.

## **1.2. Institutions in the Higher Education Sector: Expectations/ Realities**

Various reports and commissions by the UGC and other government and non-governmental bodies working in the field of higher education has amply made it clear that the institutions have to relentlessly strive to achieve the twin goals of equity and excellence.

Though the state is a strong source of funding, the institution should successfully exploit all possible avenues for generating resources to improve its economy and efficiency.

In the present times, excellence in higher education by itself implies active utilization of the latest developments in scientific knowledge and technology in teaching, student support, faculty empowerment, administration and governance. Appropriate adoption of technology also helps in the widening the vistas of knowledge by opening windows to the world outside.

The State of Kerala has won several achievements in the field of primary education but it has been critically noted that the same degree of progress is not achieved in the higher education sector.

Thus it becomes the pressing duty of every higher educational institution in the state to strive hard to fill this gap.

Equity, excellence and employability should be the goals which a higher educational institution has to strive for.

### **1.3. Brennen College: Status Quo**

The college is occupied in a 32.88 acre land in two premises. The main campus has total land area of 25.88 acres and 7 acres is situated off campus at Palayad village, which is given to Sports Authority of India. The college was granted special heritage status by the University Grants Commission in 2016 with an aim of conserving the college which is more than 125 years.

Brennen College is an educational institution in Kerala, affiliated to Kannur University. In 2011 January, this institution with its entire legacy and quality drive was reaccredited by National Assessment and Accreditation Council with A Grade at the level of 3.04 on four-point scale. Government Brennen College is a pioneer institution that promotes U.G, P.G and Research studies in Languages, Sciences, Humanities and Social Sciences, Commerce and Management Studies.

The College offers Degree courses in 18 subjects and Post Graduate courses in 11 disciplines. The college is also offering research facilities in 8 sectors. This is the only College in Kerala that offers B.Sc. Honours Course in Mathematics. The Brennen College now comprises with about 183 members of staff (Teaching and Non-teaching) and over 2500 students on its roll. This College is a recognized Research Centre under the University of Kannur for PhD Degree in eight disciplines.

### **1.4. Existing Situation Assessment**

The existing infrastructural facilities, buildings and facilities, utilities and other auxiliaries, intake and strength, staff and administration and extra-curricular activities are assessed as below:

➤ **Affiliation, recognition and NAAC Accreditation Affiliation:** The College and all its Undergraduate and Post Graduate programs are affiliated to the Kannur University in Kerala. The details of the affiliation is shown below:

- Affiliated to Madras University – 1890
- Affiliated to Kerala University - 1956
- Affiliated to Calicut University - 1968
- Affiliated to Kannur University - 1996

➤ **UGC Recognition:** The college has been recognized by UGC, and included in the list of institutions eligible to receive Central assistance as per Section 2 (f) & 12 (B) of the UGC Act, 1956. The University Grants Commission (UGC) provides financial assistance to eligible colleges which are included under Section 2(f)b and declared fit to receive central assistance (UGC grant) under Section 12 (B) of UGC Act, 1956 as per approved pattern of assistance under various schemes.

➤ **NAAC Accreditation:** It is re-accredited by National Assessment and Accreditation Council (NAAC) with “A” Grade (CGPA Score 3.04 on a 4 Point Scale in 2nd Cycle) on 8th January 2011.

### **1.5. Post Accreditation Initiatives**

Development initiatives at the college have been at a much faster pace in the post accreditation era. There has been remarkable improvement in every aspect which has helped the institution to stand on terra firma with its head raised high among the Higher Education Institutes (HEIs) in Kerala.

1. Quality of educational services offered by the institution has improved. New programmes are being added. The departmental activities have been brought under a transparent system which is being updated and perfected by every passing day. The atmosphere is filled the buzz of workshops, seminars, invited lectures, and visit of international and national level experts.

2. Drop-out rate is minimal, and the performance of the students in the exams is commendable. A fairly good number of students clear NET and JRF consistently.
3. Skill development programmes are pursued with dedication. Initiatives such as Coaching for entry into service, and Remedial classes are integral part of the system.
4. Placement services are embedded. Plans are afoot to make serious interventions in this area.
5. New books were purchased, e-journals made available, automation installed, Internet came with lightning speed, laptops and PCs queued up, smart boards flashed on walls, and seminar hall and auditorium worked miracles. The image of the college is undergoing a sea change with reflecting floors and new shades on walls.
6. Cultural activities have scaled new heights at the zonal, inter-zonal and south zone levels. Laurels keep flowing in. There is an upsurge of vigour and enthusiasm, all this owing to the well-designed master plan charted out with the active involvement of students, teachers, staff, parents and the community. A system is in place, and the graph-line of cultural awakening keeps soaring.
7. Extension activities are taken up at departmental level. Training in language skills are given to the socially disadvantaged groups. Tie-ups are established with LSGs and community linkages formed. NSS concentrates on agriculture, new farming methods, housing schemes for the homeless, empowerment of the marginalized, community services, palliative care, blood bank, human rights and other issues. Hence the best NSS Unit and PO.
8. Organic farming, green campus, herbal garden, natural virgin coppice, no-plastic, renewable energy, waste disposal, campus beautification – a classic example of the other side of an HEI.

### **Favourable Trend-Changes**

The higher education environment is witnessing a sea change in terms of the flood of opportunities and challenges. There are exciting possibilities that could open up with the proper employment of technological resources and advancements in modern pedagogy.

At the same time, a dynamic and changing environment does throw up challenges for the institution as it has to keep reinventing itself again and again to remain significant in a changing environment. Innovations with a disruptive potential will have to be adapted and a system will have to be put in place to ensure that all goes according to the larger design.

In fact, one of the changes that the state has recently witnessed is in the preference for the arts and science colleges. They have become attractive as the benefits of training in basic sciences are gradually but surely becoming evident.

- ❖ Students with very high academic records of accomplishment now prefer Arts and Science colleges.
- ❖ The graduate employability as well as postgraduate employability is much higher in Arts and Science colleges compared to the fact that only 7% engineering graduates are employable. (*India Today* in New Delhi, July 13, 2016)
- ❖ We are able to perform innovative science in our system as we have the best faculties and best students with us. Socio-economic aspects can be analyzed in the best possible manner and our various departments can do resource mapping. These new inventions and data created by our college can be a definite contribution to the state.



- ❖ Research oriented training and emphasis to the curriculum of Postgraduate students enable to increase their employability potential in the research sector, which is extremely pertinent for the state as well as the country.

### Goals to be achieved

The college has formulated “Three Es” as determinants of the goals to be achieved: Equity, Excellence, and Employability.

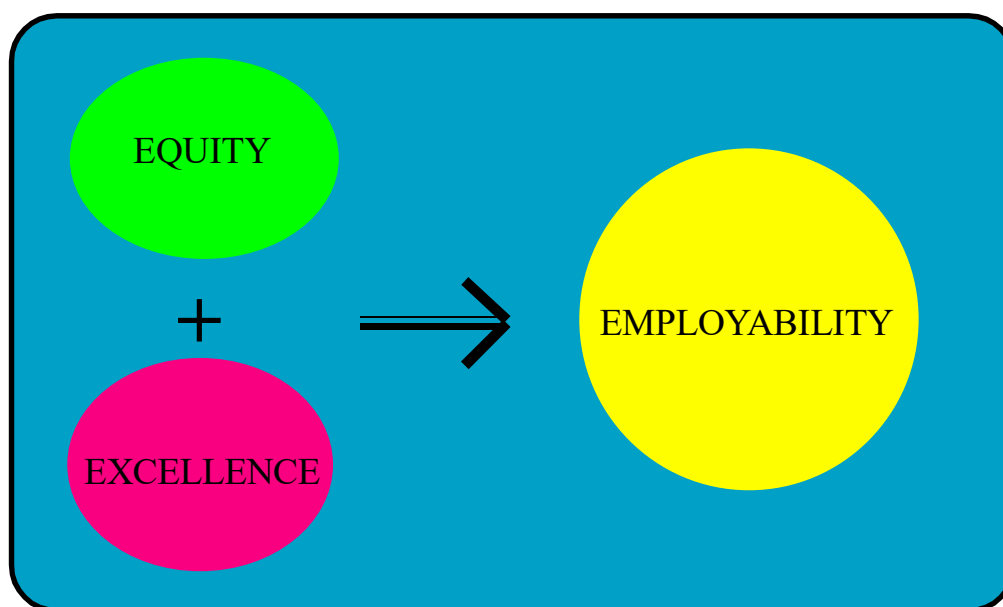


Figure 1. The Three Es

### EXCELLENCE

- ❖ **Equity:** The College gives equity and social justice a prime place in its strategic plan. Education should ultimately yield betterment of society by trying to achieve the goal of equity
- ❖ **Excellence:** Brennen College considers it of prime importance to give excellent training to its students in the respective subjects that are taught. Achieving the learning outcomes is crucial in this regard
- ❖ **Employability:** Employability is more about syncing in with the needs of the economy. While having exceptional knowledge about the subject taught, at the graduate and post graduate levels, students should be employable as they graduate. The attempt is to find a fine balance between mere vocational training and pure bookish learning.

### **Reviews by eminent academicians, former faculty, alumni**

Boasting of immensely rich alumni who have left their marks in all walks of life, right from the former minister for external affairs of India, chief minister of Kerala to various internationally and nationally acclaimed scientists, scholars and artists, the college has every right to be a claimant of being the premier educational institution in the state. Many of them had made remarks and observations of the college and shall justify the vision of the Strategic Plan 2020-25.

## **PART II**

### **VISION 2025**

The Strategic Plan 2020-25 identifies two core areas of development: (i) Improving the teaching/learning experience in the campus and (ii) strengthening the academic and research domains of the college.

For achieving these twin goals, sub-areas of priority were identified as

- i. Achieving global standards at graduate and master's level education
- ii. Community Colleges
- iii. Research and Innovation
- iv. Local Area Network Learning Portal (LANLP)
- v. Information Kiosk
- vi. Finishing School for Postgraduate Scholars (FSPS)

#### **2.1. Achieving Global Standards at Graduate and Masters Level Education**

The college aims to transform itself into a prime centre of learning with international repute. It aspires at setting global standards in teaching at undergraduate levels. The

institution is in the process of evolving a comprehensive plan to radicalize its teaching for achieving excellent learning output.

With this aim, the college is planning to set up an exclusive committee for innovative teaching and monitoring learning outcomes through an intense process.

The evaluation of whether the students have achieved the learning outcomes will be done through specially designed periodic tests designed with the help of educational psychologists.

The monitoring committee will constantly evaluate the learning outcomes through adoption of both universal tests and sampling studies.

Teachers and tutors will be encouraged to adopt innovative student centric and intensive instruction methods, and the success will be periodically evaluated.

The college will strive to increase the student diversity at the undergraduate level, with national and international students.

## **2.2. Community Colleges**

The idea for community colleges for those who could not access regular education has already been mooted by the DCE. The college would try to take initiative in this regard. The faculty of the college can teach in community colleges after regular working hours and the infrastructure of the college can be used to this end, thus maximizing the utilization of resources.

## **2.3. Research and Innovation**

Cutting-edge research is always a prime responsibility of a college, even though the primary focus will always be on teaching/learning. Upgrading a research centre inevitably helps in motivating and improving quality of under graduate and master programmes.

Being an institution with outstanding academicians in both science and humanity subjects, the aims to achieve national standards in research. Already with faculty holding several

patents, global quality research leading to more patents for the faculty and researchers will be the target of the college. Industry interactions and collaborations, which are essential to achieve this goal, are already afoot in the campus.

#### **2.4. Local Area Network Learning Portal ( LANLP)**

E-learning resources and projects done by students can be uploaded with this portal. Teachers can deposit learning content such as lecture notes and presentations. In addition, this portal can host the attendance and other academic activities done by the student, for evaluation purpose. Every computer system in our LAN will bear an icon for entering this portal, which is web- based. This portal will be mandatory for all students and teachers to track their activities in campus. Syllabus, timetable, class schedules, important announcements, doubt clearing session, remedial coaching etc. can be availed from different menus of this application. Common notifications and announcements can be sent to registered mobile phone numbers. This portal will be the heart of the college, bearing information about examinations, internal marks, attendance, student profile etc. Teachers and students can have login ids and passwords for accessing this.

#### **2.5. Information Kiosk**

A small structure with an assistant can help the students and the public with all the services and details available for the college. There should be an interactive terminal, which will provide a map and important facts and information of the college. Students can use the kiosk to look up campus events. An electronic display board will display important notifications such as scholarships, examinations, fees details and so on.

#### **2.6. Finishing School for Postgraduate Scholars (FSPS)**

Postgraduate courses are generally over by the end of November in each year under University of Kannur. Therefore, the students can undergo a five-month intensive training for CSIR-UGC- NET examination under different departments. In addition, they can be oriented to various research disciplines by interacting with eminent researchers from various institutions and hands- on training in our own instrumental facility. This facility

can be shared among various colleges in the district and our college can serve as a nodal center. The outcomes include strengthening the existing programmes, improved employability of candidate, chiseling of experimental and analytical skills.

### PART III

## THE TARGETS 2025

The Brennen College heralds the diversity of the Indian and Kerala culture. This diversity is acknowledged both within and outside the classroom, by fine-tuning the academic and administrative tactics. The broad target for 2025 is to exploit this diversity in order to achieve Equity, through which Excellence and Employability can be attained. Socioeconomic diversity is the aspect that is of primary concern here, which can affect the ultimate goal of the college, Employability. The existing trend is that the applicants from lower-income class increases and the applicants from the upper-income class decreases. While planning the targets for 2025, this precarious balance has to be kept in mind.

The following conduits to Target 2025 have been identified for Strategic Plan 2020-25:

- i. Strengthen teaching/learning experience
- ii. Strengthen Academic domain
- iii. Strengthen Research domain
- iv. Strengthen Operational domain
- v. Strengthen Financial domain

### TARGETS (GENERAL)

The broad targets for 2025 can be summarized thus: ❖ Be within the first 10 colleges in India in terms of academic excellence.

Be within the first 100 institutions in the world.

Develop a comprehensive monitoring system to scientifically analyze student progress

Bring the entire administration and teaching within the ERP mode.

Have at least 1% international students registered in the graduate and undergraduate programmes.

Have 10% of the students from outside the State of Kerala

Achieve 50% placement ratio in Masters through effective career counseling and orientation.

### **MISSION 2025**

Our mission 2025 will be

- ❖ Prepare the ground for achieving global standards in teaching
- ❖ Provide excellent infrastructure – physical, intellectual and administrative – for interdisciplinary research.
- ❖ Prepare the campus to become residential and extend the duration of academic activities.

### **SWOC ANALYSIS FOR GOVERNMENT BRENNEN COLLEGE, THALASSERY**

#### **INSTITUTIONAL STRENGTH**

- Government Brennen College, Dharmadam, Thalassery is one of the first institutions of higher education in the state of Kerala with a long tradition of **130 years**.
- Located in a serene rural area and blessed with abundant natural resources, the institution offers a model academic environment.
- The college is catering to the needs of diverse sections of the society and the inclusive education is evidenced by larger enrolment of girls and OBC students



- College has meritorious Faculty with vast experience and high academic qualifications and international exposure.
- The college is having alumni organizations which support many of the academic and infrastructural needs of the institution. The alumni include the chief minister and 3 ministers of the current state government, one central minister and many distinguished academicians, scientists and public figures
- Supportive management with a progressive vision
- Excellent community-neighbourhood relations
- Transparency in staff recruitment based purely on merit and social justice.
- Transparent admission procedures purely based on merit and social justice, using digital platforms
- Divyang Friendly campus with wide range of services for students with special needs
- Eight Research Departments 67 scholars and 18 research guides
- Productive extension activities
- Eco friendly campus and regular conduct of environmental sensitization programmes
- Dynamic student community with high potential for self- empowerment
- Highly committed and responsible PTA
- 39 programmes catering to current requirements of students
- Excellent student support system
- Excellent infrastructure with well-equipped laboratories
- International Level Digital Library with a collection of more than one lakh books and journals.

- Regular conduct of National seminars and workshops with the financial assistance of UGC, ICSSR, KSCSTE, Government of Kerala etc.
- Four star accredited Additional Skill Acquisition Programme (ASAP) of Kerala higher education
- Scholarships and free ships to majority of the students
- Dedicated human resource and basic facilities for physical education. Many students represented India in International and National events
- Choice based Credit and Semester system for UG and Semester system for PG
- Proactive units of NSS, NCC and Subject associations.
- Publication of Peer reviewed and ISSN numbered interdisciplinary research journal
- Wide range of student support services including hostels for ladies and male students
- Strong feedback mechanism. Feedback is collected on-line from stakeholders and the changes are made accordingly.
- Regular Academic audit to analyze the potentials and issues of the institution.

### **INSTITUTIONAL WEAKNESSES**

- Lack of national and international students
- College is situated in a rural setup and is away from the urban advantages.
- Consultancy and industry linkage needs to be strengthened
- College has no academic autonomy of its own and hence the curriculum is designed and revised by Kannur University, to which college is affiliated.
- Difficulties/delays on account of multiple regulatory agencies causing disincentives for genuine players

- Tight academic schedule restricts time devoted to co-curricular and extracurricular activities

### **INSTITUTIONAL OPPORTUNITIES**

- Industry oriented courses can be designed to ensure employability
- Opportunity for supplementing the core faculty through a system of visiting faculty (including faculty from industries)
- Scope for improving opportunities for academic management system, fully exploiting the e-learning resources
- Opportunity for institutional tie-up – industry linkages for strengthening teaching learning and also for field exposure to the students/faculty
- The college library, with its vast resources and modern technologies can act as a knowledge hub for the community
- The research centres in the college can provide solutions for local issues ranging from building up sustainable environment to establishing peace and harmony in the politics of the region.
- College is on the threshold of implementing Brennen PURA( Providing Urban facilities to the Rural Areas) as envisaged by our beloved former president A P J Abdul Kalam during his visit to the College.

### **INSTITUTIONAL CHALLENGES**

- Resource mobilization from different funding agencies and NGOs
- Attracting foreign students and students from other states
- Exploring avenues for international collaborations

A close analysis of its strength, weakness, opportunities and challenges are enumerated below.

### **TARGETS (SPECIFIC)**

The specific targets for Strategic Plan 2025 are shown below:

#### **Requirement/demand Analysis**

The major requirement of the college is to augment the existing infrastructure facilities to highlight the institution as a Centre of Excellence. The college also requires additional infrastructure facilities to accommodate the increasing student strength. The major requirements raised by the college authorities are as follows:

##### **(a) Classroom**

- Additional classrooms
- Dust free environment
- Better acoustics
- Digitalization of the existing classrooms
- Sufficient lighting and other electrical equipment
- Adequate quality furniture

##### **(b) Laboratory**

- Expand the area of present labs
- Equip with modular furniture and advanced instruments in science lab.
- Increase number of computers and accessories in Language lab
- Install softwares for language lab to train in languages

**(c) Faculty room**

- Expand the area of faculty rooms
- Provide cubicles to each faculty
- Provide Cloud computing facility to each faculty
- Provide required furniture like computer table, cupboard etc.

**(d) Research Scholar's room**

- Provision may be made along with Central library
- Cloud computing facility
- Required furniture

**(e) Conference hall**

- Better acoustics
- Conference microphone system
- Video conference equipment
- Desktop Computer and Projector
- Air conditioning

**(f) Information Technology**

- Learning Management System (LMS)
- Digital Library (including library software, digital books, audio-visual library)
- Campus Wi-Fi connectivity
- High speed Internet (more than 100Mbps)

- Server room with dedicated blade server (to host college website, LMS, Digital library)

- Computer centres for each block

- Mobile Application

**(g) Biological garden**

- Modification of Greenhouse

- Compound wall

- Butterfly garden

- Fern house

- Experimental net house

**(h) Administrative office**

- Office automation (Install College Management Software)

- Expand the present working area

- Sufficient store room with furniture

**(i) Canteen**

- Shift the canteen to a more convenient building

- Modernize the canteen facilities and premises

**(j) Toilet**

- Renovate and modernize present toilets

- Construct separate toilet (Differently abled friendly) facilities for staff, boys and girls in each block.

- Installation of incinerators for girls' toilet



**(k) Accommodation**

- Construct an accommodation complex.
- Development of adequate hostel facilities for girls
- Development of adequate accommodation facilities for teaching and non-teaching staff

**(l) Road Connectivity**

- Bitumen tarring of present roads
- Construction of new roads
- New road to be constructed along the periphery of the campus to avoid current trespassing.
- Installation of sign boards

**(m) Compound Wall and Gate**

- Repair as well as increase the height of compound walls and the gates
- Construction of adequate compound walls

**(n) Water distribution system**

- Upgrade to new water line connectivity to ensure regular supply of water
- Facilitation of new water sources

**(o) Vehicle parking area**

- Construction of new parking area with roof for vehicles of staff, students and visitors.

**(p) Girl's Room**

- Construction of new girls' room in a different location with sufficient facilities
- Installation of incinerators and sanitary pad vending machine

**(q) Auditorium**

- Furnishing with seating arrangements
- New flooring with elevation
- Repairing of existing toilets, green room, doors and windows

**(r) Sports Facilities**

- Construction of new Sports complex with all required facilities.

**Justification of the components**

From the demand analysis and the reconnaissance survey, the following problems are identified:

- Inadequate academic infrastructure for the UG and PG students. The facilities for the Sanskrit department, English department, Physics department, Chemistry department etc. are insufficient to meet the current requirements.
- Most of the classrooms are arranged in shift basis due to insufficient academic spaces.
- No dedicated space for research scholars.
- Inadequate digitalization of the existing classrooms.
- Inadequate accommodation facilities for girl students. (Present intake of 80 against a requirement of 300-500 students)
- Inadequate staff quarters (8 quarters against a requirement of 90; for both teaching and non-teaching staff)
- Inadequate facilities for conducting sports events and for daily practice as the college has a glorious track record in sports events.

The college focuses on maintaining the infrastructure for academic, co-curricular and extracurricular activities. Optimum utilization of available resources is ensured, and proposals for further developments are moved accordingly. Development projects of the institution aim at augmenting the infrastructure to keep in pace with academic progress and to meet the increased requirements of the students.

The college, being the hub of learning in North Kerala, implements all practical measures to minimize the rate of drop outs, and to provide the students with an amiable academic atmosphere. The supporting systems cater to the diverse learning levels of the students, and launch projects to assist better learning. Being a centre of learning that is approached by students from rural areas, and socially and economically backward classes, the college takes special care to support and encourage students, and enable them to acquire skills.

### **Redevelopment Plans**

Based on the analysis of the requirements from the college authorities, the redevelopment activities are segregated in 2 phase. The phase 1 refers to the development activities which are proposed as part of the KIIFB funding. The proposal was identified based on the assessment of the requirement raised by the college authorities. The same was finalized based on the analysis of the existing facilities and its present demand and in immediate future. The first phase development activity includes demolition of physical education department, union room and a staff quarter.

The phase 1 redevelopment plan which has already got administrative sanction for an amount of Rs. 32 crores consists of the following components:

#### **(a) Academic Building**

A four storied academic building is proposed to be constructed behind (towards east) the Physics block. The academic block is having a plinth area of 948.08 sq. m and a total area of 3792.32 sq. m.

### (b) Indoor Stadium

The proposed indoor stadium is situated near the existing playground so that the sports zone is well segregated from the academic zone. The indoor stadium consists of tennis and badminton courts along with galleries. Locker rooms are also

provided. The total area of the indoor stadium is 1335 sq. m.

### (c) Ladies Hostel

Ladies hostel is considered as an immediate necessity in the redevelopment plan. The building I proposed to the east of the staff quarters. The building is having a plinth area of 1460 sq. m and a total area of 5771 sq. m. The building is having integrated Kitchen space, dining hall, warden room etc. in the ground floor. All the floors are equipped with cloth drying area, recreation room, dormitory space etc. A total of 78 rooms (5.7 X 4.1m) are provided which are three occupancy rooms. A dormitory space (9.5 X 4.3m) is provided in all floors.

After the first phase development, the campus will have a FAR of 0.35 and the total coverage will be 16.39%.

The Phase 2 proposal include development of an academic building, centre for convergent studies and staff quarters.

Based on the Guidelines for Creating Master plans for Colleges developed by KITCO the following are key changes proposed for the college:

- **Laws and Guidelines:** After the execution of the proposed aspects within the master plan all existing and new buildings, infrastructure and assets will conform to standards.
- **Sanitation:** As an over design strategy the master plan eliminates all standalone toilet blocks. Toilets blocks will be incorporated to within the proposed new buildings.
- **Open Space:** The open spaces are given in such a manner that it can be broadly divided into landscape in the central main entry and play area. The specifics of the design

of the utilization of the newly created open space will be developed in coordination with the stakeholders but the focus will be to organize pedestrian mobility, landscaping and play areas.

➤ **Biodiversity and Landscaping**

The College master plan designates spaces for maintaining existing trees and create manmade biodiversity spaces within the open spaces referred above. The plan is to preserve existing plants and trees as much as possible. The proposed designated and landscaped spaces will facilitate recreation, interaction, and sport. The master plan also recommends designing pavements and sidewalks that percolate rain water.

➤ **Pedestrian mobility and signage**

The College master plan proposes pedestrian pathways that will improve access to buildings, playground, and facilities within the college campus. A combination of predetermined pedestrian pathways (covered and open) will connect the new and existing buildings. The master plan also provides guidelines on signage that will provide students and visitors easy orientation to the various buildings and aspects within the college campus.

➤ **Energy**

The master plan recommends the college management to develop an energy plan including developing an inventory of its existing assets that use energy. Considering that the college will have about sufficient floor area by the end of the implementation phase, it is recommended to consider installing solar plant by using the terraces of the buildings to position the solar panels

➤ **Water**

The College master plan proposes a water management plan. This includes developing a water storage system whereby the sourcing of water from existing wells are consolidated. It is recommended that the College develop a water resources strategy by investing into a rainwater harvesting mechanism for which a filtration and designated

storage mechanism will be installed. The design of buildings, storm water drains, and related infrastructure will enable meet the objectives set forth in the water management plan. The proposed development activities include the construction of a sump of 50,000 litres, which is enable to store water for pumping and rain water harvesting

➤ **Waste**

The College master plan includes a waste management strategy. This includes an organized way to collect and segregate organic and inorganic waste. Waste collection points/bins will be installed at all buildings. The College will develop its own plans to manage its waste through a process to recover, reuse, resale, and disposal.

➤ **Sports**

The College lacks an outdoor sport area. A multipurpose court is envisaged in the future developmental activities. Thus in future land is to be bought to include different courts and tracks to enhance student's mental health

➤ **Parking**

The master plan provides for limited parking within the campus for vehicles. There are sufficient on-street parking options for visitors. Dedicated covered parking need to be created for students commuting to college.

➤ **Security and emergency preparedness**

The College master plan re-evaluates the building designs to ensure there are no open doors with easy access to outside. The college need to install a functional communications system to broadcast messages and warnings. Security measures are built into the design of new and remodelled college buildings. The College will coordinate with the government to control/restrict access to road traversing the campus on the east side.



➤ **Expansion and growth**

The College master plan provides a schematic on future expansion phase by identifying new areas for construction and buildings that can be remodelled for enhanced use.

➤ **Signage**

Proper signage are proposed in the college premises and also outside the premises. This is in order to make the campus friendly to differently abled as well as to avoid confusion for others regarding facilities available.

**Digitalization**

We plan to upgrade the digital environment of all classrooms into state-of-the-art high tech class rooms and staff room. It is also planned to set up a high tech lecture studio for developing audio-video content.

**(a) Digitalization of the existing classrooms**

As discussed above, one of the major requirements raised in the stake holder's consultation is the digitalization of the existing classrooms. A total of 83 rooms are available (including 54 UG classrooms, 22 PG classrooms and 7 laboratories).

**(b) Digitalization of the existing staff rooms**

As part of the development of the academic infrastructure, the digitalization of the existing staffrooms is also required for holistic development of the academic infrastructure.

**(c) Digitalization of the library block**

The central library is an integral part of the college to cater the information needs of the academic community of this great institution. The contemporary nature of higher education system has increased the significance of libraries and learning resource centres. The modern academic atmosphere warrants, students and faculty to rely more on the resources of the library in order to make achievements in their respective fields. This is a fact, which has already been recognized by Higher Education Council, National Assessment

and Accreditation Council, etc. and the grading of the college heavily depends upon the infrastructural facilities of the library.

### **Additional requirements for the library**

The emerging information and communication technologies (ICT) have a significant role to play in college libraries. They should be aimed at providing timely, accurate and current information to the students, researchers and teachers. The real challenge of today's library in the context of information explosion, is not primarily accessing information, but distribute and effectively making use of the available information. This necessitates updated, state of the art communication and reprographic facilities to be installed in the central library.

A modern college central library should be spacious enough to accommodate its users in such a way that dissemination of information will take place comfortably.

This has to be carried out by following various standards of library infrastructure.

### **(d) Computer Lab with Networking Facility**

A fully equipped Computer Lab is highly essential in the college. It is proposed to set up a new full-fledged Computer lab for the use of students. In addition, training can be imparted to students, faculty and the public in analysing data and making inferences. In due course, an analysis wing may be set up in the college so that services of trained personnel can be made available to the public for research and other activities. Add-on courses can serve to provide research assistance to the society, hands-on training to students, and generate income for the students and the college.

### **ICT in Class Room digitization:**

Information and Communication Technology (ICT) in education is the mode of education that use information and communications technology to support, enhance, and optimise the delivery of information. Worldwide research has shown that ICT can lead to an improved student learning and better teaching methods. The facilities including internet connectivity, interactive projectors, document camera etc are the basic ICT infrastructure in a modern classroom. At present, all the classrooms in our college has internet connectivity but there is no other ICT facilities.

**(i) Requirement of final year UG classroom**

It is proposed to upgrade at least one UG classroom (final year) in every department with all ICT facilities, so that it can be used for any UG batch on need basis as well as it can also be utilized as a mini seminar hall. ICT facilities required with its specifications and market price are given below

Sl No	Item	Specification	Price	Remarks
a	Interactive Ultra Short throw projector with wall mounting kit and installation	3 LCD Technology Brightness: 3200 Lumens (Colour&White) Resolution: HD ready WXGA. Lamp Life: Normal 5000 HRS / ECO upto 10000 HRS Contrast Ratio- 14,000:1 Aspect Ratio- 4:3 Native 16:9 compatible Audio Speaker: 16W Connectivity: VGA/RCA/HDMI/USB/Audio -in/out and Wifi connectivity. Wall mounting kit included. Suitable for document camera projection	1,32,000	Warranty: 2 years and additional 3 years AMC is required.
b	Document Camera - Portable	Zoom Capacity Mechanical Zoom : 8x, Output Resolution XGA, SXGA, 720p, 1080p, UXGA, QXGA (2048x1536), Lamp Built-in LED on camera head, Power Supplied USB Bus Power, USB Image Transmission USB 2.0 (480 Mbps) high speed transmission, Video/Audio Recording via software, Built-in Microphone, Image Capture Single or Continuous Capture, image optimization Image Rotation 0, 180, Flip, Mirror, software Support PC Windows 10, 8, 7, XP, Vista, Ubuntu 16.04, 18.04, MacOSX, Chrome OS, iOS and Android App; WIA and TWAIN interface, wireless connectivity to projector.	48,500	Warranty: 2 years
c	Speaker	.5" Two way surface speaker, 70V/100V Transformer with 8 Ohm Bypass, 130 degree Conical Coverage, Include X Mount, Effective	7,000	Warranty: 1 years

		frequency range 170 Hz–20 kHz, Rated noise power / voltage 2 16 watts / 11.3 volts rms, Broad-band sensitivity 3 85 dB SPL, Coverage angle (-6 dB) 130° conical (500 Hz–5 kHz), Directivity factor (Q) 6, Directivity Index 8 dB, Maximum continuous SPL 4 97 dB, Maximum peak SPL 4 103 dB, Rated impedance 8 ohms, Recommended amplifier power 32 watts into 8 ohms		
d	Amplifier	Rated Output 60 W, Power Consumption 72 W (EN60065), 4 A (DC operation at rated output), Frequency Response 50 - 20,000 Hz ( $\pm 3$ dB), Distortion 1% or less at 1 kHz, 1/3 rated power, Input MIC 1-3: -60dB*, 600 $\Omega$ , balanced, equivalent to XLR-3-31 type, AUX 1, 2: -20 dB*, 10 k $\Omega$ , unbalanced, RCA pin jack, Mute: Contact screw terminal (for MIC 1), Output Speaker out: Balanced (floating), M3.5 screw terminal, distance between barriers: 8.3 mm (0.33"), High impedance: 170 $\Omega$ (100 V), 83 $\Omega$ (70 V), Low impedance: 4 $\Omega$ (15.5 V), Rec out: 0 dB*, 600 $\Omega$ , unbalanced, RCA pin jack, Phantom Power DC +21 V (MIC 1), S/N Ratio 60 dB or more.	11,500	Warranty: 1 years
e	Wireless Microphone with headband and receiver	Frequency Preparation PLL Synthesized Control, Output Connector 1 Balanced XLR socket, 1 Unbalanced 6.3mm phone jack, Frequency Preparation PLL Synthesized Control, Carrier Frequency Range 502~960 MHz RF Outputs Maximum 10mW, Stability $\pm 10$ KHz, Frequency Deviation $\pm 48$ KHz, LCD Display Power On/Off, Low battery, Controls Power On/Off, AF Level, Channel Selecting, Mute. Spurious Emissions < -50 dB C Audio Frequency Response 40~18,000 Hz, Carrier Frequency Range 502~960 MHz, S/N Ratio >	11,000	Warranty: 1 years

		105dB, T.H.D. < 0.6% @ 1KHz, Display LED, Display Contents Antenna A/B, RF/AF Status, Controls Power On/Off, Channel Selecting, Audio Level, Audio Output Level -12dB, AF Output Impedance 600Ω, Squelch Pilot Tone, Noise and Mut		
f	Cable section	1. 6 U Rack with Accessories, 2. Multimedia Modular Wall Face Plate with HDMI + VGA + 3RCA (AV) Audio Video Panel Sockets - White 3. 3 meter HDMI Male to Male Cable, 4. 3 Meter VGA + Audio Male to Male Cable, 5. 10 Meter HDMI Male to male Cable, 6. 10 Meter VGA Male to Male Cable, 7. Speaker Cable in Meter 8. Assorted Cables & Connectors 9. Plastic square conduit pipe - as required Installation	12,000	Warranty: 1 years
g	Laptop	Processor: 7th Generation Intel Core i3-7020U processor (2.3 GHz, 3 MB cache, 2 cores) Operating System: Pre-loaded Windows 10 Home with lifetime validity, Display: 14-inch HD (1366x768) display, Graphics: Intel HD 620 Graphics, Design & battery: Thin and light design   Laptop weight: 1.59 kg   Average battery life = 7 hours, Lithium battery, 1 USB 2.0, 2 USB 3.0, 1 HDMI, 1 Audio-output	41,000	3 yr wty
		Total	2,63,000	

**(ii) Requirement for PG and MPhil classroom**

It is proposed to upgrade all PG and MPhil classrooms of our college with necessary ICT facilities. The list of equipment required with its specifications and market price is given below:-

Sl No	Item	Specification	Price	Remarks
a	LED TV and wall mounting kit	43 " LED FHD Display with IPS Panel Technology,Brightness 400cd/m2 Input Connectivity VGA*1,HDMI*2,RS232x1,USB,RCAx1 with inbuilt speaker	58,000	Warranty: 3 years and additional 2 years AMC is required.
b	Cable section	1. Multimedia Modular Wall Face Plate with HDMI + VGA + 3RCA (AV) Audio Video Panel Sockets - White 2. 3 meter HDMI Male to Male Cable, 3. 3 Meter VGA Male to Male Cable, 4. 10 Meter HDMI Male to male Cable, 5. 10 Meter VGA Male to Male Cable 6. Plastic square conduit pipe - as required Installation	6,000	1 yr wty
c	Laptop	Processor: 7th Generation Intel Core i3-7020U processor (2.3 GHz, 3 MB cache, 2 cores) OS: Pre-loaded Windows 10 Home with lifetime validity, Display: 14-inch HD (1366x768) display, Graphics: Intel HD 620 Graphics, Design & battery: Thin and light design   Laptop weight: 1.59 kg   Average battery life = 7 hours, Lithium battery, 1 USB 2.0, 2 USB 3.0, 1 HDMI, 1 Audio-output	41,000	3 yr wty
		Total	1,05,000	

**Summary**

Type of Classrooms	Cost per class	Number of class rooms	Total
Final year UG	2,63,000	18	47,34,000
PG and MPhil	1,05,000	25	26,25,000
	Grand Total		73,59,000

**Total estimate for digitization of classrooms in the college will be 73,59,000 (Rupees Seventy three lakh fifty nine thousand only)\**

**(a) Server Room and College automation system**

In order to set up a server for placing a dedicated server for virtual computing facility.

**(b) Lecture Studio/Theatre**

In order to develop the digital teaching content as well as public awareness videos by the upcoming centres, it is proposed to set up a Lecture Theatre with a minimum seating capacity of 50.

**(c) Augmentation/Modernization of laboratory facilities**

The College is planned for establishment of an interdisciplinary centre for Science and Environment as part of achieving the title of Centre of Excellence. As part of the

same, the college is planned to establish research facilities of international standards in the following divisions:

- 1) Division of Chemical Science
- 2) Division of Life Science
- 3) Division of Physics Science
- 4) Division of Mathematical Science and Informatics

## MASTER PLAN DESIGN



### CENTRES OF EXCELLENCE

For strengthening the academic, research and administrative domains, specific Centres of Excellence (CoEs) are proposed to be established.

CoEs may be described as organizational environments that strive for and succeed in developing high standards of conduct in a field of research, innovation or learning.

Primary Objectives are

- ❖ Basic and strategic research
- ❖ Innovation and advanced technological development
- ❖ Social and economic development



- ❖ Elevate the significance and quality of service

### **CONCEPT NOTE ON CENTRES OF EXCELLENCE (CoE)**

Society's responses to major social challenges must be informed by an improved understanding of human perceptions, responses, and of the economic and social impacts of the physical, and biological processes to promote social wellbeing. A comprehensive understanding of the main social challenges requires the collaboration of physical scientists, social scientists, humanities scholars and engineers, and will be highly interdisciplinary.

These major issues in society can be understood by a collective effort by different disciplines working in interdisciplinary groups. Indeed, the boundaries between the different disciplines are becoming increasingly blurred. The need to create a new generation of students who combine a rigorous disciplinary depth with the ability to reach out to other disciplines and work in interdisciplinary teams is more urgent. Because these skills cut across traditional disciplinary boundaries, there is increasing support from government and business for the interdisciplinary programs that focus on identifiable long-term problems in the economy, society, and government, as opposed to department-based programs that focus on academically defined disciplinary paradigms. Interdisciplinary research preparation and education are central to future competitiveness, because knowledge creation and innovation frequently occur at the interface of disciplines. Interdisciplinary programs help to ensure better educational programs, which give students and faculty members a better ability to work in a problem-oriented way and at the same time the ability to think across fields and interact. It responds to the need to prepare work force for an increasingly interdisciplinary, collaborative, and global job market. Interdisciplinary programs provide opportunities to strengthen the interaction between the business sector and research, especially in relation to the humanities and social science research and education, where interaction has been especially underdeveloped. The attempt of the proposed Centre is towards this objective. As the sustainability dimension of any issue connected to human beings can be treated only at a holistic perspective, scientific and systematic efforts from various fields such as Economics, Political Science, History, Geography, Geology, Languages and physical sciences are a prerequisite. The strength of the proposed Centre is the potential for utilizing the existing manpower in an efficient and effective way for the betterment of social well-being.

## **VISION**

The vision of CoEs is to develop a multidisciplinary approach to enhance the learning and research process in various streams of science and invoke a new research culture. The CoE envisions a peaceful and just world as well as the social, physical, political, economic and cultural environment, understood and governed in a way that enables sustainable development for all.

## **MISSION**

The mission of the CoEs is to develop transformative knowledge, which will act as the foundation stones to pave the way towards sustainable societies. Imparting new dimensions to the school curriculum is also research propaganda for the centre. Our research is trans-disciplinary, conducted together with all scientific, political and social partners, in order to develop solution for urgent scientific and sustainability challenges and to support regional, national and international decision-making process.

## **GOALS**

The important goal of the CoE is to partake in the process of achieving well balanced development goals such as development of smart materials which help directly or indirectly the day to day life, affordable and clean energy, clean water and sanitation, environmental purity and reducing pollution, waste management, innovation and infrastructure, removal of poverty and hunger, good health and well-being, quality education, gender equity, decent work and economic growth, industry, reduced inequalities, sustainable cities and communities, responsible consumption and production, climate action, participatory planning and all-inclusive cultural and social development.

These goals can be achieved through the various programmes and activities. The important programmes envisaged for the Centres are:

- (1) Encouraging and conducting multi-disciplinary research on various dimension
- (2) Conduct multi-disciplinary integrated training and skill development programmes for developing tools and strategies
- (3) Conduct short-term courses for increasing the supply of work force to assist policy makers

for sustainable development

(4) Consultancy services, training and evaluation programmes for government and other agencies for preparing, implementing and monitoring various programmes

(5) Creation of modern multi-disciplinary knowledge hub for future research

### **Proposed CoEs**

As part of the vision to convert the college into a centre of academic excellence, it is proposed to follow a two-pronged plan of dividing all the existing disciplines into two separate schools of interdisciplinary nature and setting up two interdisciplinary centres of excellence, taking in the social sciences and humanities disciplines under one centre and natural sciences disciplines under the other.

1. The various disciplines in social sciences and humanities will be interlinked and brought together under a new Centre of Excellence named Centre for Convergent Studies.

2. The science disciplines will be interlinked and incorporated under a new Centre of Excellence, named Interdisciplinary Centre for Science and Environment.

1. **Brennen Intra-University Centre for Convergent Studies (BICCS)**

2. **Brennen Centre of Excellence for Environment (BCEE)**

1. **BRENNEN INTRA-UNIVERSITY CENTRE FOR CONVERGENT STUDIES (BICCS)**

#### **GOVERNMENT BRENNEN COLLEGE, THALASSERY**

Brennen Intra-University Centre for Convergent Studies (BICCS) is visualized as one of the centres of excellence in Govt. Brennen College as directed by the Government of Kerala vide letter No.862339/K3/2016/H. Edn. dated 29<sup>th</sup> November 2016. The Centre envisages to encourage the emerging research needs, that are largely interdisciplinary in nature, which could address the dynamics of contemporary social realities. It is expected that the limitations of current dominant research practice, which is being emerged from the rigid disciplinary boundaries, could be overcome by academically converging the disciplines under one Centre.

The Centre is expected to improve upon the current research trends by providing long term international expertise to researchers from peripheries. Since the Centre, as proposed, is an innovative attempt in Kerala, it is expected to attract scholars from within the country and abroad. Since the interdisciplinary- collaborative research is envisaged, it is likely to provide a healthy and broad research outcome that shall contribute towards better understanding of society and in turn to a positive social transformation.

The Centre would also accommodate Research Supervisors and Scholars from various Departments of Kannur University and affiliated colleges of the University. It would also provide facilities to house scholars visiting from other parts of Indian state and from abroad.

**Aim:**

The Centre is aimed to provide creative space for interdisciplinary researches by integrating the available and possible knowledge resources of Arts, Humanities and Social Science disciplines.

The Centre is proposed have two thrust areas:

- i. Social Process and Dynamics
- ii. Language, Culture and Aesthetics

**Objectives:**

- i. Periodical identification of innovative research areas and themes.
- ii. Promotion of creative researches of interdisciplinary nature.
- iii. Familiarize and equip researchers with the state of art knowledge in Arts, Humanities and Social Science.
- iv. Provide the researchers with, print and electronic resources including books, journals, periodicals, online journals, ebooks and access to digital depositories available in the country and abroad.
- v. Develop digital database and archives and open it for researchers.
- vi. Organize international collaborative researches and exchange programmes.

- vii. Conduct erudite lectures, lecture series, workshops, short term courses, seminars etc. that could benefit researchers, teachers and post graduate students.
- viii. Offer Ph. D and integrated Ph. D (M. Phil-Ph. D and MA-Ph. D) programmes.
- ix. Provide academic space for researchers with innovative ideas, who can finance themselves.
- x. To channelize funds from various resources and to utilize them for research.
- xi. To motivate regular faculties towards research and support them financially and academically.
- xii. To disseminate the knowledge generated at the centre through books, journals, periodicals and electronic sources.

**Programmes Visualized at the Centre:**

**A. Regular Programmes:**

- i. Research leading to Ph. D
- ii. Integrated Ph. Ds
  - a. M. Phil – Ph. D
  - b. MA – Ph. D

**B. Specific Programmes (are to be redesigned periodically to meet specific social needs):**

- i. Constitute chairs to attract international scholars so as to offer short-term courses, lecture series and to carry out research leading to publication.
  - a. Duration of a chair should be less than two years.
  - ii. Erudite lectures
  - iii. Seminars/ Workshops
  - iv. Collaborative research
  - v. Research projects
  - vi. Refresher and short term courses

**Establishment and Administration:**

- i. The Centre may be located at the old Central Library till the proposed Building for the Centre is completed.
- ii. All Research Supervisors and Research Scholars of the existing research Centre's of the College, in Arts, Humanities and Social Sciences would form part of the new Centre. However, such research scholars will be governed by the rules and regulations existed at the time of their joining and subsequent amendments, if applicable.
- iii. The Centre should be consisted of a Head of the Centre, a Research Director, a Research Body, a Research Group and a Governing Council.
- iv. The Principal of the College will be the **Head of the Centre**.
- v. For the consistent governance of the Centre, one of the Research Supervisor working in the college may be selected by the research body as the **Research Director** of the Centre. The selection will be for a period of **two years on deputation**. The Research Director will directly execute the academic and administrative matters for the Head of the Centre.
- vi. A **Research Body** is consisted of Head of the Centre, Director of the Centre, the Director of the Research Directorate, Kannur University, one Research Supervisor from each discipline coming under the Centre, one representative from research scholars and the Office in charge of the Centre. The nomination of specific Research Supervisors to this body will be the responsibility of the Head of the Centre. The validity of this body will be for a period of three years. This body will be responsible for resolving administrative, policy and other issues related to the Centre. No additional representation may be made from the discipline from which the Research Director is selected.
- vii. The **Research Group** is consisted of the Head of the Centre, the Research Director, all Research Supervisors and Research Scholars of the Centre, and the administrative staff in charge of the office of the Centre.
- viii. The **Governing Council** is consisted of the Vice Chancellor of Kannur University, the Head of the Centre, the Research Director of the Centre, the Director of the Research Directorate, Kannur University, two Research Supervisors from within the Centre and two external experts initially nominated by the Research Body. Further, the nomination of external experts will be made by the Governing Council.

The Governing Council will be responsible for finalizing the courses and the approval of syllabi of the M.Phil part of the Integrated M.Phil-Ph.D programme and submit the guidelines pertaining to

research activities. Research Director of the Centre will be the Secretary of the Council. Three to four meetings of the council are to be convened in an year. The selections to the council will be valid for a period of three years.

ix. Responsibilities to run each specific programme can be assigned to the members of the research group.

x. The editorship of the peer reviewed journal may be given to the faculty members of the research group, exempting the members of the research body, for a period of two years in rotation. The advisory committee/editorial board of the publication may include nationally and internationally reputed experts.

xi. Initially, one administrative staff in charge may be employed to handle the general administration and fund handlings related to the Centre.

xii. The transfers of research supervisors of the Centre should be restricted to protect the research interest at least for 8 years and if necessary, the same may be made within the jurisdiction of the Kannur University.

xiii. Faculty members engaged in developing the Centre may be given reasonable relaxation in regular teaching.

xiv. The interdisciplinary as well as the integrated Ph.Ds. require wide modifications of the existing regulations, in terms of method of selection, conduct of examinations and the syllabi. Hence sufficient **academic freedom** may be given to the Centre to actualize the goal of the Centre of excellence.

#### **Admission Procedure:**

i.

a. All admissions to the Centre should be regulated through an entrance examination and personal interview.

b. The marks scored in entrance examination and interview will be the sole criteria for selection.

c. Being an interdisciplinary centre, the subject in Post-Graduation will not be a hindrance in pursuing specific areas of interest.

d. The entrance test may include language proficiency, reasoning ability, interpretive skill and knowledge and interest in the discipline of study.

- e. The Research group will be exclusively responsible for the selection procedure.
- ii.
- a. Existing research scholars may be treated as the part of the programme “Research leading to Ph.D”.
- b. All other selections under “Research leading to Ph.D” shall be done among M.Phil holders or international researchers after successful defence of their research proposal/ synopsis.
- iii.
- a. Admission to integrated M.Phil-Ph.D programme should be done once in an year.
- b. Candidates who have scored more than 55% in the PG Programme in any discipline or those who are awaiting PG result are eligible to apply for admission.

#### **Course Procedure: Integrated M.Phil-Ph.D**

- i. There will be common courses for each school that has to be undergone by all candidates in the first semester.
- ii. In second semester, after completion of the courses related to their specific areas of research, the candidates have to defend their research proposal for Ph.D/ M.Phil.
- iii. After successful completion of the first two semesters the candidates have to submit their dissertation within six months as the part of M.Phil Programme.
- iv. The promotion to Ph.D programmes will be governed by the marks/ grades scored in the M.Phil examinations and will be governed by the UGC/ University regulations.

#### **Scholarship for Integrated M.Phil-Ph.D**

- i. A research scholarship with an amount equivalent to the UGC-JRF is proposed to attract outstanding scholars to the Integrated M.Phil-Ph.D programme.
- ii. The period of the scholarship may be four years except for specific cases in which it can be extended for one more year.

**Budget Estimation: (Recurring expenses are calculated for a period of three years)**

**For Institutional setup**



### On Improving Infrastructure

a)Furniture and space for research scholars (Approx. 100)	2,00,00,000
b)Furniture and space for visiting scholars and supervisors	100,00,000
c)Facilities for common discussion room (20-30 persons)	6,00,000
d)Facilities for seminar room (Max 100 persons)	12,00,000
e)Facilities for Publication section	15,00,000
f)Facilities for refreshment room	6,00,000
g)Centralized AC	30,00,000
h)Utility room for differently abled	10,00,000

#### Digital Infrastructure

a)Dedicated server for digital repository	30,00,000
b)Webpage and Software related to research area	20,00,000
c)Access to ebooks, e journals, thesis, data bank	

Audio-video resources etc.(Will be shared with Kannur University)

d) Cloud computing system (Approx. 130 Nos.)	50,00,000
e) Advanced printing system	10,00,000
f)Digitized automatic 24 Hrs entry system	10,00,000
g)High speed internet connectivity (100 Mbps)	
h)UPS, Networking and Network management system	50,00,000
i)Debit card management for expenses related to centre	5,00,000

#### Repository Development

a)Books	2,00,00,000
b)Journals (to be renewed periodically)	20,00,000
c)Periodicals (to be renewed periodically)	10,00,000
d)Archives	5,00,000

Total	7,89,00,000
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<b>For Academic Programmes</b>	<b>for faculty development</b>	<b>1,00,00,000</b>
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For Academic Programmes	involving international scholars	1,50,00,000
Fellowship to eligible scholars		1,00,00,000
<b>GRAND TOTAL</b>		<b>11,39, 00,000</b>

### 1. Brennen Centre of Excellence for Environment(BCEE)

Centers of Excellence should act as a tool for capacity building.

- The development of scientific thinking
- Experimental skills and strategies
- Invited Talks and Research Collaborations
- Workshops and Seminars
- Hands-on training in Analytical Instruments
- Amalgamating Interlinked Disciplines
- Assisting Researchers to publish their work (LaTeX, Photo editing, Graphical and mathematical analysis, access to research journals and templates)

Govt. Brennen College, Thalassery, an important learning centre in higher education in the state of Kerala was established in the year 1862. Edward Brennen, who established Brennen College, was a philanthropist with an aim of imparting quality education to boys of all casts and creeds. This institution is one of the remarkable educational institution of North Kerala, which made many important personalities during its more than 125 years of service. It is one of the five centres of excellence in the state of Kerala. It is a special grade college affiliated to Kannur University, and placed under section 2(f) by the UGC. It is re-accredited (third cycle) by the National Assessment and Accreditation Council (NAAC) in 2011 at 'A' level.

The Departments of Botany, Physics, chemistry, and Zoology offers graduate and postgraduate programmes in the subjects concerned. The thrust areas of current research include Environment, Nano sciences, Atmospheric sciences, conservation, taxonomy and molecular biology, also provide research facility and expertise to the academic community. In order to achieve international standards in the above said areas of science, the departments intended to establish a Centre of

**Excellence for Environment.** For this, a fully modernized laboratory with a well equipped sophisticated instrumentation facility has to be established. Hence herewith the proposal is submitted for consideration.

**Aim:** To establish a modernized laboratory for supporting studies of atmosphere, water, soil, environment pollution, microbes, plants and animals under the name '**Centre of Excellence for Environment**'.

### **Objectives**

- To provide sophisticated research facility to the students and researchers from various institutions in the area.
- To promote conservation studies on environment, flora and fauna
- To act as a research hub for the science academic community across Kerala
- Centre for providing service to community.

This proposal to build up a new and advanced **Centre of Excellence for Environment**, meant to lift the dreams of its founder. It will give the common man an opportunity to experience the emerging fields of scientific research and also provide services to people living in the area. The support and funding of the government of Kerala is sought to build up the state of art laboratory facilities. Details of the requirements and the social advantages of constructing such a lab is given below.

Environmental science is one of the important key areas of science servicing people. whether it is linked with microbial, animal or plant, is one of the thrust areas of contemporary science that gives significant knowledge capable of answering various challenges to the existence of human life. The Zoology, Botany, Physics and Chemistry departments of the college have experienced faculty specialised in various research areas. Further the college already has many gene sequence depositions in databases like GenBank of NCBI. The faculty of the said departments have been involved in major researches on parasite genomes, Molecular barcoding (of both insects and plants), and they have published many research articles in the area in reputed national and international journals.

The thrust research areas of the proposed centre will be chemical analysis of various environmental samples, Biodiversity studies with contemporary approaches like molecular Barcoding, molecular phylogeny, Metagenomics of viruses, Bacterias, fungi, cancer cells, other diseases, Molecular ecology, Molecular diagnostics Pathogen identification, DNA fingerprinting and pharmacogenomics.

### **Molecular barcoding and Phylogeny analysis**

Molecular barcoding is the organism identification with short sequences of conserved genes. This involve the isolation of such gene sequences from valuable collections and their deposition in genomic databases like GenBank of NCBI. As said above the Zoology and Botany departments have already undertaken such research works.

The molecular barcoding will be helpful in digitalising molecular data and make identification easier and more accurate. This make remarkable developments in pest control, pathogen identification, disease diagnosis, vector control and management of epidemics. This also reveals the evolutionary relationships between organisms from the mutation rate of their genes.

### **The Metagenomics**

The metagenomics is the identification of genes in a collection of microbes, cells or tissues and quantification of their expression. This involve environmental Metagenomics that would identify microbes in a collection from an environment using their 16s rRNA gene sequences. cancer Metagenomics that involves identification of mutated genes in samples from cancer patients. The availability of NGS and qPCR can make this kind of studies easier at reduced cost. The Metagenomics make easier the identification of microbial strains from different environments even from human body and also useful in exploring cancer genomics and genomics of diseases like diabetes, non-alcoholic liver cirrhosis. Hence the 1 crore for an NGS will make it worth full in Metagenomic projects. The proximity of Malabar cancer centre gives an opportunity for associated studies.

### **Pathogen identifications**

The genomic lab would make the identification of pathogens easier from their DNA sequences. This reveals many information involving strains, drug resistance etc., which make the diagnosis and treatment of diseases easier. This facility would become an important resource during epidemics. A genomic lab can give effective support to the public health service of the region in the following instances.

1. The diagnosis of bacterial and viral diseases involving leptospirosis, tuberculosis, bacterial and viral pneumonia, SARS, H1N1, dengue fever, chikungunya, Japanese encephalitis, NIPPA etc.
2. Identification of drug resistant bacterial strains.
3. Prediction of epidemics by the identification of vector population carrying pathogens.
4. Identification of cancer mutations.
5. Identification of inherited diseases.
6. Pathogen screening of cultivars from farmers
7. Screening of prawn seedlings from farmers for diseases

This service is very important in diagnosis, disease management and control of epidemics, unfortunately the common people in the region can't access this service because of the absence of a nearby genomic centre and the relatively high cost in private sector.

### **DNA finger printing**

This is the STR or VNTR sequencing and typing of human beings, which will be helpful in solving human identification problems related to crimes, accidents and blood relation disputes. Also helps in population genetics.

### **Pharmacogenomics**

Involve typing of various drug receptor genes in human and determination of accurate drug interactions in different peoples.

### **Tissue culture lab with electroporator and micromanipulator**

Tissue culture lab providing separate facilities for the culturing of microbes, cells involving cancer cells and tissues required for various genomic studies. The electroporator and micromanipulator helps recombinant DNA technology and transgenic experiments.

### **Informatics lab**

The genomic research is nothing without informatics therefore an informatics lab is designed with a good server computer loaded with significant bioinformatics tools capable of sequence analysis, alignment, phylogenetic analysis, mutation detection etc.

### **Development of a trained manpower**

The molecular genomics is an emerging area in the contemporary biology, the trained peoples have many research and job opportunities both in India and abroad. There for the training of our students is the most important aim of centre, which give an opportunity to the graduate and post graduate students of Zoology and Botany, Physics and Chemistry departments of this college and students from other institutions of the region for a direct experience in the emerging areas and make them good researchers or professionals familiar with modern tools.

### **Real Time PCR**

#### **Technical Specifications for Real Time PCR System**

The system should be able to perform Gene expression, Plus/Minus assay, SNP, allelic discrimination and dissociation curve analysis etc.

A peltier based 96 well thermal cycler with temperature range of 40°C to 100°C

Reaction volume 10-40 µl

Should be compatible to standard 96 well plates, 8 well strips, or individual PCR tubes

All assays should run using universal thermal cycling conditions to eliminate optimization of PCR conditions

The excitation by Tungsten Halogen/Xenon source and detection by cooled CCD camera or LED based excitation

There should be enough excitation and emission filters to cover majority of dyes

The instrument should be pre-calibrated for at least seven dyes including the following during installation at the customer site: FAMTM/SYBR® Green I, VIC®/JOETM , NEDTM/TAMRA TM/ and ROX TM. The user should be able to use any of these dyes in an experiment without needing to recalibrate the instrument. Addition of new dyes should be possible without hardware change.

System should be standardized for at least two homogeneous reaction chemistries including SYBR Green I and dual color TaqMan or four color hybridization probes (FRET).

The instrument software must be capable of detecting and analyzing a different gene, SNP or pathogen target in every well of the 96-well plate. The instrument software should not restrict the number of assays or targets that can be run on a single 96-well plate.

Dedicated licensed full version software for primer and probe design with comprehensive assay design and development guidelines for quantitative and qualitative real-time assays should be provided to enable designing of custom oligo assays.

Analysis work station should be of latest configuration with a color printer

Compatible online UPS (2KV)

Application: Molecular diagnostics of viral, bacterial diseases – helps to predict and manage epidemics, a molecular diagnostic centre in the area is important in the recent background of epidemic out breaks. It is also useful for the researchers of the area, for gene expression studies.

ChemiDoc System with computer

## **BUDGET ESTIMATE**

### **A. Laboratory Equipments**

Sl. No.	Item	Justification	Amount
a	Real Time PCR	Molecular diagnostics of viral, bacterial diseases – helps to predict and manage epidemics, a molecular diagnostic centre in the area is important in the recent	1600000

		background of epidemic out breaks. It is also useful for the researchers of the area for gene expression studies.	
b	ChemiDoc System with computer	Help full in detecting chemilumiscence	700000
c	<p><b>ABI 3500 genetic analyser</b></p> <p>The ABI 3500 Genetic Analyser is an automated eight-capillary genetic analyser designed for a wide range of sequencing and fragment analysis applications. — The ideal alternative to gel-based DNA analysis for any research, clinical, or forensic lab — enables you to automate applications from de novo sequencing to SNP validation and linkage mapping. This versatile analyser is so easy to use.</p>	DNA sequencing is routine in taxonomic, phylogenetic, molecular diagnostic and pharmacogenomics studies, the researchers of the area depend on private laboratories of Cochin and Bangalore with higher cost, the installation of equipment in this Govt. institute will reduce the cost and increase the accessibility for more researchers. The sequencing of 6000 samples will give back the cost of equipment	6500000
d	Refrigerated centrifuge, 2ml X 24 head, 24000rpm,microprocessor controlled, brushless motor,	Preparatory, for isolation and purification of samples and molecules	250000
e	Inverted trinocular, microscope with phase contrast objectives, 100x,60x, 40x, 10x, 5x, 12megapixel camera, image analysis software, Micromanipulator for cell manipulation and microinjection. desk top computer with 8 <sup>th</sup> gen corei5 processor 8gb ram, 1 terabyte hdd, USB3, HDMI, Ethernet ports and genuine windows 10 software.	For evaluating cultured cells and microbes in living condition, micromanipulator helps microinjection and transgenic studies	1500000



f	Florescent trinocular, microscope with florescent objectives, 100x,60x, 40x, 10x, 5x, 12megapixel camera, image analysis software, desk top computer with 8 <sup>th</sup> gen corei5 processor 8gb ram, 1 terabyte hdd, USB3, HDMI, Ethernet ports and genuine windows 10 software.	Helps in studies involving Chromosome structure, cell structure, and molecular organisation of cells, also helpful in diagnosis and screening of genetic diseases.	1500000
g	Stereo trinocular, microscope, 12megapixel camera, image analysis software, desk top computer with 8 <sup>th</sup> gen corei5 processor 8gb ram, 1 terabyte hdd, USB3, HDMI, Ethernet ports and genuine windows 10 software.	Identification of morphological features of plants and animals, conduction micro dissections	1200000
h	Co2 Incubator, 165L, direct heat, stainless steel, iso5 HEPA filter, 180°C sterilization cycles.	Cell culturing experiments	150000
i	Microwave oven	Preparation of various gels and mediums	5000
j	Laminar airflow chamber with vertical airflow, UV lamp, HEPA filter, Burner, Stainless Steel 304 grade 1.2 mm complete, internal dimension 1317 x 630 x 610 MM (L x B x H), air velocity 90 FPM at 6" from face of the filter +/- 20 Feet Per Minute, table top Stainless Steel 304 Grade 1.2 mm Thickness, Front Top Loading Pre-Filters / Complete work area will be of SS 304 including HEPA Grill, Table Top and Light Canopy Internal surface. As per IEST – RP – CC002.4, cleanliness class ISO Standard 14644 – 1 -Class 5, stages of filtration 1)Pre-Filters = 10µ with an efficiency of 90% (Washable HDPE media in FRP PU	Providing sterile environment for inoculation in culturing experiments	200000

	Coated Frame) 2) 2) Mini pleat HEPA Filter Encased in Aluminum Frame Final = 0.3 $\mu$ with an efficiency of 99.999% (HEPA Filter).		
k	<p><b>Biosafety chamber</b>Type: Class II, Type A2Power of Blower: 350WAirflow Circulation: 220/50American AAF brand ULPA filterLCD DisplayMain Filter Typical Efficiency: ULPA, 99.9995%@0.12<math>\mu</math>mExhaust Filter Typical Efficiency: HEPA, 99.995%@0.3<math>\mu</math>mDownflow Velocity: 0.28 m/sInflow Velocity: 0.55 m/sFluorescent Lamp Intensity (Lux): e"1100Supporter: 75mm adjustable heightInternal Dimensions (W * D * H) : 45.9*24.0*26.8(in)Removable stainless steel operation platform without screws, for no accumulation of contaminantDismountable air inflow plate, for easy cleaning and disinfectConcaved operation platform, for collecting the waste liquid Internal wall is constructed by a single plate, and the 12mm arc angle connerThe volume of liquid tank is over 4L, Equipment should be equipped with outlet valve for convenient cleaning and maintainingEquipment should have UV sterilization reservation setting &amp; time setting functionLamp to be set behind supporterEquipment should have Glass sash and the blower/motor interlocking, UV light, blower/motor and fluorescent light interlocking &amp; Sash and Sound &amp; light alarming for - opening height of sash exceeds the safety limit line, airflow fluctuation exceeds 20%, when sash is not closed properly but</p>	Provide safety while handling hazardous chemicals and pathogenic organisms	500000

	<p>blower turned off &amp; filter life is less than 10% of total lifetime etc.<b>Standards</b>  <b>Compliances:</b> EN12469, Europ SFDA YY-0569,China<b>Air Quality:</b> ISO 14664.1, Class 3, Worldwide US Fed Std 209E, Class 1 USA<b>Filtration:</b> EN-1822(H14), Europe IEST-RP-CC001.3, USA, IEST-RP-CC007,USA, IEST-RP-CC034.1,USA<b>Electrical Safety:</b> EN61010</p>		
1	<p>HPLCA Liquid chromatography system is required for the analysis of organic solutes in liquid samples. The following are the required specifications of this system and its support system required for its operation. 1) A quaternary pump system with the capability of handling 4 solvents as mobile phase. These solvents may be used together or individually or in any combination. 2) The flow rate offered by the quaternary pump must be at least between 0.001 – 10 mL/min. 3) The system must be capable of handling pressures up to 40MPa 4) The system must have a suitable flow dampening device to reduce pulsating flow. 5) The compositions of these solvents may be adjustable dynamically using a gradient system or in isocratic mode. 6) The system must have an in-built degasser. 7) The system must have a tray for holding the solvent bottles safely and securely minimizing the risk of spillage. Solvent bottles and appropriate suction tubes with inline metal/ceramic or equivalent filters must be provided for use with HPLC grade solvents. 8) Clear and easy valves and methods for purging must be available. The tools required for the purging must be provided along with the system. 9) The fittings must be easy to operate with the tools provided. 10) Appropriate tools for maintenance must be provided. 11) It is preferable to have some leak detection system. 12) Some spare consumables (such as inline filters)</p>	Isolation and purification of samples and extracts	1500000

must be provided initially. 13) The system must be able to work with the voltage available in Indian conditions (220-240 V) (50/60 Hz) without any major power conversion. If such power conversion is required, such a convertor must be provided along with the system in addition to the UPS.

14) A column oven compartment must be provided to maintain the temperature of the column between ambient and a maximum temperature of 50 C with a resolution of 1 C.

15) An autosampler must be provided that can inject samples into the LC system with sample volumes ranging from 0.1 microliters to 100 microliters. The instrument must be provided with a The autosampler must be capable of holding atleast 15 vials at a time and must allow for programmable automated injection of these these samples into the LC system without interruption of the operation. The autosampler must be able to hold vials (approximately 1.5 mL with screw cap and septa) that are interchangeable with standard HPLC vials provided by other vendors. Sampling loops of other volumes must be easily available for purchase and installation, if required.

16) A Diode array detector (PDA or DAD) must be provided for the measurement of the signal. This system must be capable of measuring absorbance in at least the UV and Visible light range of wavelengths. To facilitate this, the system must be provided with appropriate light sources (lamps or equivalent). The DAD detector must have a flow cell that can be easily cleaned if necessary. It must also accessible for easy change of lamps and maintenance. The range of wavelenths must be between 190 – 800 nm. Appropriate communication cables must be provided to communicate with the LC injection system. The DAD must be synchronized with the LC system for the start of a run and must not required the user to press start on the detector system.

17) The flow lines must be robust and must be

able to withstand the high pressure generated in the system without causing frequent leaks. The flow line exiting the detector must be drained into a waste bottle. 18) A software system controlling all the aspects of the HPLC system mentioned above must be provided (original disk or Drive or CD). This system must be capable of creating and storing methods with stored parameters such as flow rate, run time, composition such as isocratic or gradient, column temperature – if applicable, acquisition parameters such as DAD parameters in a run. It should be possible to call these methods during a sequence of samples in the autosampler. The system should have the capability of running different methods for different samples. The software should allow the programming of sample sequence for running different samples with different methods without user intervention and in an automated manner. 19) The software should have the capability of different display parameters during the run of a sample. The post run data analysis should be available in the same software where the chromatogram of a run sample must be available for analysis. Data analysis must include standard chromatogram operations such as area, height, width and percentage estimation. The software system must also allow the easy integration of calibration data into data analysis methods. The software must be able to perform spectral analysis for UV-visible, fluorescence and RI detectors. 20) The software data analysis system must also allow for the integration of UV spectral library information for automatic matching of the peaks with reference spectra, even if this might not be standard features. If this UV spectral matching feature is available, please highlight it. 21) The data analysis information and report

	<p>preparation with customized settings must be available. The report format should be either rtf or pdf format. The raw data may be extractable as a csv format or text file. 22) A suitable computer system must be provided for this system that can handle all the operations. (No printer is required – it is optional). 23) A suitable UPC system must be provided that can provide a back up operation of 30 minutes that can allow the user to shut the system down. 24) System accessories such as spare tubing, fitting and tools for the maintenance of different aspects of the system must be provided. 25) A generic C-18 column must be provided that can separate a mixture of polyaromatic hydrocarbons 26) The system manual must be provided in either CD or hard copy. 27) AMC (Annual maintenance contract) or technical support must be provided for the first three years. 28) A tubing kit and maintenance tool kit must be provided along with the system. 29) Installation and training must be provided by the vendor. 30) The vendor (or representative / authorized agent) must have a service center in Chennai.</p>		
m	<p>Gas Chromatography – Mass Spectroscop (GC-MS)The System should include provision for head space analysis/solid phase micro extraction and therefore a system with relevant accessories will offer an advantage. The System should demonstrate high sensitivity and specificity for various groups of chemicals. High increase in sensitivity with a possibility for simultaneous quantitative/qualitative analysis and library searching of various analytes are required • Computer controller and software run; Gas flows controlled by electronic pressure controlling method; adjustable pressure in increments of 0.001 PSI or better. • Conforms to International safety standards. • Automatic gas flow stop in case of system shut down</p>	Identification of active components in extracts	4500000

(unexpected or not). Column Oven • Operating temperature range from near ambient to 450 °C. • Can house at least 2 columns. • Temperature stability:  $\pm 0.1$  °C or better. • Temperature programming and overheat protection facility. Pneumatics • Programmable Electronic control; can compensate for variations in ambient temperature and pressure for maximum stability. • Direct setting of split flow rates and ratios. • Automatic leak testing/detection. • Pneumatic program rates such as 0-100.0 psi/min or 0-1200.0ml/min<sup>2</sup> or 0- 200.0 cm/s –min or better. • Modes of operation including but not limited to: Constant flow, constant pressure, programmable flow, programmable pressure Injection ports/modes • Different operation modes: such as but not limited to split, splitless, split/splitless, pulsed split/splitless, large volume injections packed column simulation; with Head Space Detectors: Quadrupole Mass spectrometer and Electron Capture Detector (ECD) Auto sampler/ (and head space injector) • Compatible with GC-MS above • Tray for between 80-150 vials or better Programmable vial sequence • At least three 2- 4mL wash vials, and one waste vial • Sample size (0-0.5  $\mu$ L in 0.1  $\mu$ L steps with a 0.5- $\mu$ L syringe, 0-5  $\mu$ L in 0.5  $\mu$ L steps with a 5- $\mu$ L syringe, and 0-50  $\mu$ L in 5  $\mu$ L steps with a 50- $\mu$ L syringe) • Suitable for multiple injection modes Mass Spectrometer Detector (electron multiplier type) to support Electron ionization (with a possibility for Chemical Ionization); extraction/inert (or related) ion source heatable to 200 – 350 degrees Celsius; and has the option for electronic scan rate of 10,000 to 12500 u/s; robust quadrupole mass filter capable of withstanding heating temperatures of 100-200 degrees Celsius; maximum mass of 10,000 – 1050 u; diffusion pump 50-65

	<p>L/s or better; turbomolecular pump (70-80 L/s) or better; mass stability of 0.1 amu or better over a 48 hour period; electronic dynamic range of 1x10<sup>6</sup> or better; High sensitivity in (a) EI scan mode s/n of 300:1 to 1500:1 or better upon injection of 1 pg/μl of octafluronophthalene and scanning between 50-300 u (typically for 272 u); (b) Instrument detection limit of d"10 fg to d"30 fg on injecting 100 fg octafluronophthalene and monitoring for 272 u in ESI-SIM splitless mode. Installation and validation/quality control kits Power Supply: 220-240 V 50Hz With user's, service and maintenance manuals in English With UPS that can hold power for a minimum of 1 hour With instrument control: Both manual and remote operation using a software that supports simultaneous qualitative and quantitative data analyses With analyte/Mass spectral library Including head space analyses (manual and a head space sampler) and solid phase microextraction. Head space sampler shall include provision for software control; electronic pneumatic control; up to 100 or more vial capacity; automatic vial leak detection; including sample heating. Easy access of and proximity to technical/customer service delivery and plan for continued support to end user.Desk top computer: windows 10, 8GB RAM, 1TB HDD, Intel Core i5 8<sup>th</sup> generation pprocessor, compatible GCMS software.</p>		
n	<p>Scaning Electron Microscope, Bench top model suitable for life science applications</p>	<p>Useful in studying the surface features of any material involving organisms, helpful in material characterisation, evaluation of thin films, quality assessment of surface finishers, taxonomic studies and evaluation of structure</p>	4500000



o	Atomic absorption spectrometer (AAS)	Soil analysis, micro-nutrient studies, helpful servicing farmers and researchers	2000000
p	Kjeldahl N2 analyser	Analysis of N2 in the sample, helping identification of soil nitrates, service both farmers and researchers	200000
r	Quick chem flow injection analysis platform for water analysis	Helping studied involving salt composition of water samples, helping community service in determination of quality of drinking water and scientific research associated with water quality	400000
s	Lab based pulse modular chlorophyll fluometer	Determination of chlorophyll content	200000
t	High speed double distillation unit	Providing sufficient quantity of pure water for laboratory works	250000
u	Algae lab analyser	Studies of algae	200000
v	BOD incubator with fluorescent lamp, timer, and microprocessor based temperature and humidity control and monitoring.	Productivity and water pollution studies	100000
		Total	28155000

B. Miscellaneous and consumables

5,00,000

Grand Total

**28655000**

Rupees Two crore eighty-six lakhs fifty-five thousand only

**a. Administrative staff**

The staff, recruited through open competitive examinations, is highly talented and can work wonders with the right motivation and orientation in a congenial atmosphere.

At present they are trained by the IQAC and by the Directorate of Collegiate Education. But more efforts are required in this regard.

The college will set up a Committee consisting of the Principal, Administrative Officer, Representatives of Teachers, Students and Parents who will constantly monitor and suggest steps to enhance the efficiency of the functioning of the college office.

**b. Students**

The college is one among the first choices when it comes to graduate education in Kerala. The diverse student population from across Kerala, with very high scores in the qualifying examination is a testimony to this fact.

The college has to adopt innovative teaching methods to serve better the demands of this brilliant group of students.

The Monitoring and Evaluation Cell will measure student progress and success of instruction through continuous analysis with the help of advanced tools in educational psychology.

**c. Placements**

The career counseling cell has to intensify its activities and the college has the goal of achieving 75% placement at undergraduate level and 50% at post graduate level.

This goal requires two cardinal changes

1. Attitudinal change

It has been noted that students are generally averse to work unless they are placed in permanent public sector jobs or they are certain they have exhausted all the possibilities of getting into one.

The archaic concept of putting oneself into permanent post as the final stage of career still hold

supreme. The attitude prevents students from availing multiple opportunities available. They lose crucial time for self-development in career as they are very late comers in private sector jobs. The motto should be to take jobs as takeoff points rather than settling grounds. Self-reliability is crucial for achieving one's true potential.

## 2. Ability to convert knowledge into skills

Knowledge is often acquired but it is hardly converted into skills which hinder employability. The college will take proactive steps to address these lacunae.

### **Additional Priority Areas**

#### **Infrastructure**

While planning an expansion, the heritage status of the college and the limits imposed by the unique spatial location need to be addressed. Intensive and efficient use of the existing space is essential in this regard.

The College aims at initiating a major global campaign for ideas and material resources to renovate and retain the historic structure in all its glory while serving the pressing needs of the modern times.

#### **Hostels and Other Facilities**

It has to come to the notice that many students who are from nearby districts or from remote places, often spend 5 hours or more for daily commutation. This affects the process of learning both for the individual students and for the student community as a whole since their time for quality learning is short. It also makes their time in the campus limited to the working hours alone.

This has to be remedied by increasing the percentage of hostellers so that the campus gets a higher proportion of residential students which can transform the working of the campus by retaining the student resource in the campus for a longer duration.

The change requires huge resources as it would mean providing cheaper and better accommodation and other facilities to the students that will prompt them to stay in the hostel.

The college proposes the construction of at least two large hostels to accommodate students

whose daily duration of commutation exceeds 4 hours.

### **Internationalization**

In the era of global connectivity, it is imperative to go global in student recruitment to achieve a high degree of excellence.

The college has set a moderate target of 1 % international students in its admission list by 2025

### **Global Alumni Association**

The college has alumni associations at various levels like alumni association of senior citizens, a general alumnus, batchwise alumni, departmental alumni, etc. The alumni associations always take a keen interest in the developmental activities of the College. This includes financial assistance to meritorious students and assistance towards the beautification of the college campus.

By proposing to form a Global Alumni Association, the college aims to tap the vast resource of alumni for the beneficial and sustainable betterment of the institution.

### **Finance**

Financial resources are mobilized from

1. Government / Department of Education, Kerala.

The University College is funded by the Department of Education of Government of Kerala. The Directorate of Collegiate Education is the apex body which runs the institution.

Having the government as a major source of funding, helps the college to deliver upon its mission of social justice through public education serving free education to the students.

Apart from the funding by the government, the college also explores resources from various other sources.

2. Alumni support:

The Brennen College has very strong alumni who assist the college with a number of resources. The alumni, many of whom occupy the higher echelons of society, take an active interest in the functioning of the institution and provides free consultancy.

3. Research Funds

Projects and grants availed by the Teachers from UGC, ICSSR and other such bodies help a lot in improving the potential of the college.

4. Fees, charges & levies: The College collects a fixed amount of tuition fee from the students and it is paid to the government. The examination fees are paid directly to the university.

5. UGC grants : Special grants by the UGC constitutes a crucial resource for the progress of the college

6. Donations: The College collects a voluntary contribution from the students at the time of admission under two heads: PTA fund and CDC fund. The PTA fund is employed for the various developmental activities of the college. The CDC fund is spent for improvement of the student welfare in various ways.

7. User fees paid by UPSC, KPSC, SSC, Banks and other bodies for using the premises for examinations

## **SECTION IV**

### **THE FUTURE**

With a rich historical heritage behind it and a vibrant present, the Brennen College is all set to soar high in the horizons of excellence in the twin realms of academic and research. The Strategic Plan 2020-2025 relies on the entire community of the college coming together to transform the teaching/learning experience and in excelling in academic and research domains so as to attain exemplary employability for our students, who will redefine the future of our nation and the world. Adhering to the vision of the college and fulfilling the duty of a premier higher education institution – that of moulding socially committed and responsible citizens – Strategic Plan 2020-2025 envisions conduits to attain this noble aim.

The highest degree of excellence in its specific area of expertise, the higher education, will be the target of the Brennen College, and intends to remodel itself into a role model in this Institutionalizing a research and monitoring team to continuously research and improve upon teaching methods is one of the urgent future tasks. Greater cohesion between the teaching departments will be promoted so as to enable strong interdisciplinary tie-ups in research and knowledge production.

### **VISION OF BRENNEN COLLEGE**

Proudly bearing a rich heritage of one hundred and twenty seven years, the Brennen College, Thalassery, is the point of genesis of English education in the State. Our home community of teachers, students and researchers strive to contribute to the production and dissemination of knowledge. The college aims to mould the students into responsible and socially committed citizens of the nation through a future oriented and interdisciplinary paradigm of learning, empowering them through socialist and secular strategies of instruction to aspire for contributing to the nation's development.

### **MISSION OF BRENNEN COLLEGE**

- To move forward and keep pace with the changing needs and spirit of the time
- To adopt innovative teaching strategies for achieving learning excellence

- To foster innate talents of the students, building upon our rich legacy and heritage
- To bridge the rural-urban divide, through quality education and thus ensure social justice in higher education by serving the economically and socially backward sections, irrespective of religion, region, race or caste
- To integrate with the outside community through interactive program evolving the students into vibrant organic intellectuals

### **Conclusion**

We, all the stakeholders and well-wishers of Government Brennen College, Thalassery feel grateful to the authorities for granting us the privilege, opportunity and financial aid for realizing our collective dream of turning our institution to a Centre of Academic Excellence, enabling us to meaningfully contribute to the holistic development of the region and society we live in. We will strive to realize this dream at the earliest by completing this task entrusted to us with utmost sincerity.

**Principal**

**Government Brennen College, Thalassery**

### **RESOURCES FOR THE STUDY**

- ❖ **Knowledge Commission reports**
- ❖ **Reports produced by NAAC**
- ❖ **Reports of the Kerala State Higher Education Council**
- ❖ **Deliberations with teachers, students, alumni and parents**
- ❖ **Feedback report**
- ❖ **College Council Minutes**

