

10 YEARS
OF UNIVERSITY
RECOGNITION
20 YEARS OF
ACADEMIC
EXCELLENCE



REVA
UNIVERSITY

Bengaluru, India



Functional MoUs with institutions/
industries in India and abroad for
internship, on-the-job training, project
work, student / faculty exchange and
collaborative research during
2021 - 2022

Rukmini Knowledge Park,
Kattigenahalli, Yelahanka, Bengaluru - 560 064

www.reva.edu.in

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MEMORANDUM OF UNDERSTANDING

This Memorandum of Understanding is made and executed on 15th July 2021.

Between



ST. CLARET COLLEGE

**5th Cross, Sharadamba Nagar, MES Road, Jalahalli, Bengaluru – 560 013, Karnataka,
India**

The First Party represented herein by its Principal,
Rev. Dr. Thomas V. Thennadiyil

AND



**REVA NEST- TBI, REVA University, Bangalore
RAY Foundation**

The Second Party represented herein by the Head of Organization




Registrar
REVA University
Bengaluru - 560 064

St. Claret College (SCC), Bangalore was established in 2005 by the International Missionary Congregation of Claretians who manage two universities and over 150 educational institutions in 66 countries around the world. SCC is NAAC accredited, permanently affiliated to Bangalore University, and is managed by St. Claret Educational Society. Over the past decade and a half, SCC has chartered an impressive growth, developing thousands of young men and women for professional lives and service to humanity. Currently, SCC shapes the future of more than 2000 students enrolled across 11 undergraduate and two post graduate courses.

REVA NEST a Technology Business Incubator established at REVA University campus aims to build the entrepreneurial eco system by empowering and nurturing student start-ups and incubating innovative technology-based start-ups. (It is registered as RAY Foundation, section 8 company under Companies Act 2013. RAY – REVA Aspiring Youth Foundation).

REVA NEST is recognized by MSME, supported by Government of Karnataka, Department of Science and Technology. REVA NEST has access to universities full equipped state of art Centre of Excellence in the sector of Electronics and Communication, Design & Manufacturing, Construction and Bio-technology. It offers Creative and Innovative program for aspiring entrepreneurs in the thrust areas of Internet of Things (IOT), Electronic System Design and Manufacturing (ESDM), Robotics & Intelligent Systems, Clean Energy, Art and Design.

Purpose of MOU

The purpose of this Memorandum of Understanding (MOU) is to formally create a mutually beneficial working relationship between St. Claret College and **REVA NEST- TBI, REVA University, Bangalore.**

In particular, the MOU is intended to

- To create an Ecosystem for innovation and knowledge transfer
- To jointly organize Conferences / FDP/ Seminars/ Workshops/ Training Programs on innovation, entrepreneurship and start-up
- Translational activity: Product Development and Commercialization, Business Development, Technology Development, Enhance Entrepreneurship Mind set and etc:

Duration

This MoU is for a period of **2 years**. It can be extended further by mutual consultation and agreement.



Co-ordinators

- St. Claret College: **Mr. Chinmaya Dash** will serve as Coordinator. He along with **Dr. Safeer Pasha M** will sign as witness in the MOU document.
- REVA NEST- TBI REVA University, Bangalore **Ms. Malathi R** will serve as Coordinator. Along with **Mr. Adithya Poojary** will sign as witness in the document.
- The respective Coordinators of SCC and the partnering Institution shall be responsible for all the communication between the two institutions and the implementation of the proposed objectives of the MoU.

Administration of the signed MoU

- This MoU shall be effective and will come into force from the day the two authorized signatories of both the parties formally sign the MoU document.
- The authorized signatories and / or the Coordinators of SCC and REVA NEST will
 - Implement this MoU and all endeavours that derive from it.
 - Develop and carry out joint plans for the implementation of the objectives of the MoU by having regular communications.
- Additional activities proposed within the framework of the general terms of this Memorandum of Understanding will be formally incorporated as an addendum to this MoU, provided the addendum is agreed to and signed by both the parties.
- Both SCC and the other institution shall inform in writing the respective communities of this MoU to draw benefits from it and to contribute towards its implementation in spirit and substance.

Termination / Amendment of MoU

- Both the parties will endeavour to resolve disputes arising between them in relation to this MoU by amicable means. If this not possible because of irreconcilable differences, then this MoU may be terminated by mutual consent of the two parties.
- Either party may terminate this MoU by written notification signed by the appropriate official of the institution initiating the notice.
- A minimum of three months prior notification must be sent to the other party prior to the effective date of termination.

Intellectual Property Rights

Intellectual Property developed by the joint efforts would be the joint property of the Parties and any financial benefits or otherwise arising out of it shall be shared proportionately by the parties in consonance with the efforts / inputs given by them.

Jurisdiction

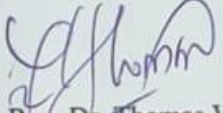
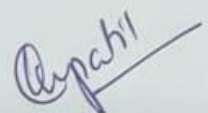
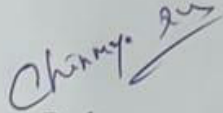
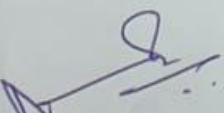
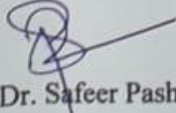
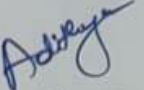
All disputes are to be settled within the jurisdiction of Bangalore courts, State of Karnataka.



Undertaking by SCC and other institution

Both the parties undertake to work closely and cooperate in the implementation of this MoU. The authorized representatives, including the signatory and the coordinator related to this MoU acknowledge having read and understood the MoU and agree to be bound by its terms and conditions.

Memorandum of Understanding between SCC and REVA NEST, REVA University
IN WITNESS WHEREOF, the undersigned, being duly authorized thereto, have signed this Agreement in two original copies in English at the place and on the date(s) indicated below:

 Rev. Dr. Thomas V. Thennadiyil Principal St. Claret College Contact Details: 080-23454755	 Dr. KiranKumari Patil, Director, UIIC & REVA NEST Contact Details:080 - 46966966
Date: 15 th July 2021	Date:15 th July 2021
Place: Bangalore	Place: Bengaluru
Witness 1  Mr. Chinmaya Dash, Coordinator, Industry Academia Cell St. Claret College	Witness 1  Ms. Malathi R, Manager, UIIC & REVA NEST
Witness 2  Dr. Safer Pasha M, Coordinator, SCC-KSCST IP Cell St. Claret College	Witness 2  Mr. Adithya Poojary System Engineer, UIIC & REVA NEST





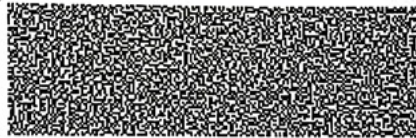
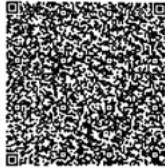
INDIA NON JUDICIAL

Government of Karnataka

Rs. 100

e-Stamp

Certificate No. : IN-KA16143677811826T
Certificate Issued Date : 28-Sep-2021 01:27 PM
Account Reference : NONACC (FI)/ kacrsf108/ R T NAGAR/ KA-BA
Unique Doc. Reference : SUBIN-KAKACRSFL0888445905025506T
Purchased by : REVA UNIVERSITY
Description of Document : Article 37 Note or Memorandum
Description : M O U
Consideration Price (Rs.) : 0
(Zero)
First Party : CSIR INST OF MINERALS AND MATERIALS TECH IMMT
Second Party : REVA UNIVERSITY
Stamp Duty Paid By : REVA UNIVERSITY
Stamp Duty Amount(Rs.) : 100
(One Hundred only)



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MEMORANDUM OF UNDERSTANDING



Under MAITRI Initiative

Mentoring Academic Interventions for Technological Research & Innovation

Between

Page 1 of 5


Vice-Chancellor
Statutory Officer

REVA University, Bukmini Knowledge Park
Kattigenahalli, Bengaluru - 560 064


Registrar
REVA University
Bengaluru - 560 064

1. This Stamp certificate can be verified at 'www.shcilestamp.com' or using e-Stamp Mobile App of Stock Holding Corporation of India.
2. The presence of this Certificate and as available on the website / Mobile App renders it invalid.
3. The responsibility of checking the legitimacy is on the users of the certificate.
4. In case of any discrepancy please inform the Competent Authority.



**CSIR-Institute of Minerals & Materials Technology (IMMT)-InTEC, Bhubaneswar
&**



REVA University, Bengaluru

In the spirit of intellectual cooperation, scholarly exchange and development of national partnership with leading institutions, CSIR-Institute of Minerals and Materials Technology (CSIR-IMMT: InTEC), Bhubaneswar and REVA University, Bengaluru agree to establish a program of exchange and collaboration on issues of mutual interest that may emerge from time to time.

This MOU is entered into on the 04th October, 2021

1. PURPOSE

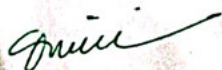
The purpose of the cooperation is to promote collaborative research, and exchange of knowledge, technical knowhow and mentoring between the two institutions in areas of mutual interest. Major areas on which the institutes shall cooperate will include but not limited to:

- Chemical Sciences and Engineering
- Pharmaceutical Sciences and Technology
- Biological and Allied Sciences
- Materials Sciences and Engineering
- Intellectual Property and Innovation Management
- Environmental Sciences and Engineering
- Technology Development and Entrepreneurship

2. MODE

The mode of cooperation will include collaborative efforts in:

- Developing joint proposals in basic and applied research for external sponsorship;
- Awareness/Sensitization & Mentoring;
- Setting up innovation/incubation centers;




- Giving impetus to societal relevance in developing technologies and disseminating information;
- Joint M. Sc, M. Tech, M. Pharm and Ph. D guidance;
- Sharing research facilities;
- Initiating professional development and capacity-building programmes;
- Sharing IP and Research Publications emanating from joint programmes;
- Conducting joint HR programmes for industry and academia.

To achieve the goals of this cooperation, both the institutes shall, within the means available to each institute, a) promote institutional exchange of scientists, faculty and student researchers to participate in appropriate research and academic activities; b) jointly organize symposia, conferences, workshops and meetings on current and futuristic research issues; c) develop and implement joint research programmes; and d) exchange disclosable information pertaining to the agreed-upon research areas.

3. SPECIFIC TERMS

- 3.1 Prior to the initiation of any particular activity, specific terms of cooperation for its execution will be discussed and agreed upon by the appropriate responsible representatives of both the institutes.
- 3.2 Students of Associating Organization will be given opportunity to carry out their project work/internship at CSIR-IMMT depending on their research topics and the latter's intake capacity. The project work will be carried out under the joint guidance of designated faculty of Associating Organization and scientists of CSIR-IMMT.
- 3.3 Designated scientists/faculty of each institute will be encouraged to deliver lectures in appropriate mode based on necessity of host institute.
- 3.4 Protection and exploitation of any intellectual property arising out of a collaborative research project will be shared jointly. Filing and maintenance related issues of patents etc. will be discussed on a case-to-case basis.
- 3.5 Employees of both the institutes shall take utmost care to protect confidential information disclosed by the other institute in good faith. Neither institute will publish or release any information pertaining to any joint activity without the prior written consent of the other institute.
- 3.6 Educational/industrial training programmes and short courses will be organized jointly with sharing of resources in an appropriate manner.



3.7 Both the institutes shall extend their analytical/characterization facilities to the faculty/scientists/ researchers/students on concessional rates.

4. SPECIFIC TERMS FOR JOINT EVENTS

4.1 Prior to the initiation of any particular event, specific terms of cooperation for its execution will be discussed and agreed upon by the appropriate responsible representatives of both the institutes, however the major responsibility for conducting such events will be with the associating organization.

4.2 CSIR-IMMT: InTEC will support the event by means of advisory/consultancy/Design of the lectures/connect to speakers from CSIR and other reputed firms.

4.3 Events should include logo and organizing structure from both the institutes.

4.4 A minimum of two events need to be organized per year and a minimum of two speakers should be invited for each such event from CSIR-IMMT by associating organization.

4.5 Event registration, invitation, communication, feedback, certificate/s and other related activities will be taken care by associating organization after mutual consent/approval.

4.6 Registration fee for such joint events may be fixed by mutual discussion and it will be collected by associating organization.

4.7 Honorarium to the speakers/experts will be paid by associating organization from the collected registration fee or internal resources of associating organization within 10 days from the last day of the event.

4.8 A sum equivalent to 50% (after deducting the honorarium to speakers) of the total registration fee collected for the event will be paid to CSIR-IMMT: InTEC (under MAITRI initiative) as consultation/advisory fee within 15 days from the last day of the event conducted.

4.9 After completion of the event, an event completion report will be prepared with all the details by the associating organization and a copy of the same will be submitted to CSIR-IMMT: InTEC within 15 days from the last day of the event conducted.

4.10 CSIR-IMMT: InTEC will provide an appreciation certificate/letter to the associating organization for the successful conduct of such event.



5. GENERAL CONDITIONS

5.1 Implementation of this MOU will be overseen by the Director of CSIR-IMMT and Registrar/Head of Associating Organization or their designated representatives.

5.2 Each institute agrees to release and hold the other institute harmless from and against any claims, damages, liability or costs, to the extent such claims, damages, liability or costs arise from the negligent or willful acts or omission of the other institution or any of its agents or employees in connection with their respective performance under this MOU.

5.3 The institutes agree that in the course of implementing this MOU, they will not engage in unlawful discrimination on the grounds of race, gender, sexual orientation, age, religion, social class, national or ethnic origin or disability.

5.4 Amendments to this MOU may be made at any time after consultation and agreement between the two institutes. Any such amendment must be made in writing and signed by both the institutes.

5.5 This MOU will remain in force for a period 5 (five) years from the date it is fully executed. Prior to the expiration date, the MOU may be reviewed for possible renewal for a further suitable time period. In addition, either party may terminate the MOU in advance of its normal expiration by providing the other with six months prior written notice and justification. In this case, persons already approved as exchange participants will be allowed to complete their exchange visits under the conditions specified at the time of their invitation to the host institution.

5.6 As a general principle, the faculty, researchers, students and scientists of both the institutes shall work cooperatively to resolve any dispute that may arise during the period of the MOU. In the event of the disputes not getting resolved, the decision taken jointly by the Directors of both the institutes will be final and binding on all concerned.

 Prof. S. Basu Director CSIR-IMMT मो. शुद्धसत्व बसु, ए.एस.एस.सी., ए.एस.ए.ई., ए.आर.एस.सी. Dr. Sudhasatwa Basu, FNASc, FNAE, FRSC निदेशक/Director सीएसआईआर-खनिज एवं पदार्थ प्रौद्योगिकी संस्थान CSIR-Institute of Minerals & Materials Technology भुवनेश्वर/Bhubaneswar-751013	 Dr. M. Dhanamjaya Vice-Chancellor REVA University Vice-Chancellor REVA University, Rukmini Knowledge Park Kattigenahalli, Yelahanka, Bengaluru-560 064
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 Registrar
 REVA University
 Bengaluru - 560 064



LETTER OF INTENT

**FACULTY OF MEDICINE AND HEALTH SCIENCES,
UNIVERSITI MALAYSIA SABAH**

AND

SCHOOL OF APPLIED SCIENCES, REVA UNIVERSITY, INDIA

The **Faculty of Medicine and Health Sciences** of Jalan UMS, 88400 Kota Kinabalu, Sabah, Malaysia and **REVA University**, Rukmini Knowledge Park, Kattigenahalli, Yelahanka, Bengaluru – 560 064, Karnataka, India hereinafter referred to as "THE PARTIES".

Desiring to promote mutual cooperation and strong relationship in the field of Medicinal plants between Faculty of Medicine and Health Sciences and School of Applied Sciences, REVA University.

Recognizing the importance of the principle of equity and mutual respect and benefits;
Pursuant to the prevailing laws and regulation of the Government of THE PARTIES;

Do hereby declare their intention to cooperate in the fields of research collaboration, joint seminar, innovation, joint grant application, joint training, student and faculty exchange program and technology transfer in the fields of Biotechnology, Biomedical Sciences and Engineering innovations related field.

The implementation of this cooperation shall be advantageous to BOTH PARTIES through this Letter of Intent (LoI). **Assoc Prof Dr Pasupuleti Visweswara Rao**, Faculty Research coordinator & Head of Non-Communicable Diseases Research Niche Areas, Head of Internationalization unit, Department of Biomedical Sciences and Therapeutics, Faculty of Medicine and Health Sciences, Universiti Malaysia Sabah shall be the **liaison officer** from both the parties.

Signed by, for and on behalf of



PROF DR. MOHAMMAD SAFFREE JEFFREE
Dean
Faculty of Medicine and Health Sciences
Universiti Malaysia Sabah

.....
Date: 2 June 2021

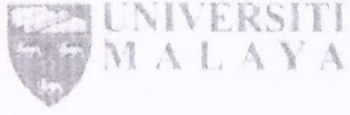
Signed by, for and on behalf of



PROF DR. M. DHANAM JAYARAM
Vice-Chancellor
REVA University, Rukmini Knowledge Park
Kattigenahalli, Yelahanka, Bengaluru-560 064
REVA University
Bengaluru, India

.....
Date: 3rd June 2021


Registrar
REVA University
Bengaluru - 560 064



MEMORANDUM OF UNDERSTANDING

BETWEEN

REVA UNIVERSITY, KARNATAKA, INDIA

AND

UNIVERSITI MALAYA, MALAYSIA

This Memorandum of Understanding (hereinafter referred to as MoU) is made on

23rd July, 2021

BETWEEN

UNIVERSITI MALAYA (hereinafter referred to as "UM"), an institution of higher learning established under the Universities and University Colleges Act 1971, whose address is at Lembah Pantai, 50603 Kuala Lumpur, Malaysia, and shall include its lawful representatives and permitted assigns:

AND

REVA UNIVERSITY (OTHER PARTY) (hereinafter referred to as "REVA"), a state private University in South India recognized under REVA UNIVERSITY ACT 2012, whose address is Rukmini knowledge Park, Kattigenahalli, Yelahanka, Bengaluru – 560 064, Karnataka, India. REVA provides multi-disciplinary education in undergraduate, postgraduate, doctoral degree and continuous learning and research programs.

WHEREAS

- A. UM is an established University which strives to enhance and strengthen its academic collaboration and has taken various initiatives to complement its educational excellence and has entered into various collaborative arrangements with other parties to enhance teaching and research.
- B. REVA University in its quest to be a Premier University in India, is striving to inculcate the best practices in the academia for the all-round development of its faculty and students would like to collaborate with internationally reputed universities for joint research, joint publications, student exchange and short duration programs
- C. The Parties are desirous of entering into this MoU to declare their respective intentions and to establish a basis of co-operation and collaboration between the Parties upon the terms as contained herein.

NOW THE PARTIES HEREBY AGREE TO AS FOLLOWS:

1. AREAS OF CO-OPERATION

- 1.1 The Parties agree to collaborate efforts in the areas of:
- a) student and/or academic and administrative staff exchanges;
 - b) joint research activities;
 - c) exchange of publications, reports and other academic materials and information;
 - d) sharing of other activities and programmes in areas of mutual interest, where such sharing shall result in benefit to both Parties;
 - e) any other areas of co-operation as agreed to by the Parties from time to time.
- 1.2 It is agreed that the terms and conditions of any agreed programme and activity contemplated in this MoU shall be the subject matter of separate written agreements to be negotiated and agreed upon by both Parties and/or any third parties, wherever applicable. PROVIDED ALWAYS the decision whether to initiate and/or implement any programme or activity shall be at the sole discretion of each Party.
- 1.3 The Parties agree to designate, on behalf of each institution, a coordinator, whose responsibility will be to supervise the execution of this MoU and to draw up programmes or activities to be implemented under this MoU, setting out specific provisions concerning the exchange programmes, budget requirements and details of funding. For this purpose, the coordinator for UM is the Faculty of Computer Science and Information Technology (FSKTM) and for REVA it will be the School of Computing and Information Technology (SoC&IT).

2. FINANCIAL ARRANGEMENTS

The Parties acknowledge that in the absence of any specific agreement in writing to the contrary, each Party will be responsible for its own costs and expenses in establishing and conducting programmes and activities contemplated under this MoU, including without limitation its own costs and expenses in travel and accommodation.

3. JOINT PROPERTY

- 3.1 The Parties agree that any intellectual property rights arising from or in connection with any programme or activity under this MoU, through and by the joint and collaborative efforts of both Parties shall be jointly owned and subject to any other terms and conditions as may be agreed upon in writing.
- 3.2 Both Parties shall acknowledge one another in any form of writing, publication or presentation based on research derived from the cooperative efforts of both Parties under this MoU, unless otherwise mutually agreed upon in writing by the Parties.

4. CONFIDENTIALITY

- 4.1 Each Party shall undertake to observe the secrecy of confidential information received from or supplied to the other Party during the period of implementation of this MoU or other agreements made pursuant to this MoU.
- 4.2 For purposes of this MoU, "Confidential Information" means any information whether prior to or hereinafter disclosed by a Party (the Disclosing Party) to the other Party (the Receiving Party) of this MoU involving technical, business, marketing, policy, know-how, planning, project management and other information, data and/or solutions in any form, including but not limited to any information which is designated in writing to be confidential or by its nature intended to be for the knowledge of the Receiving Party or if orally given, is given in the circumstances of confidence.
- 4.3 Both Parties agree that the provisions of this Clause shall continue to be binding between the Parties notwithstanding the termination of this MoU.

5. DURATION AND TERMINATION

- 5.1 This MoU shall take effect on and from the date of execution of this MoU and shall continue to be effective for a period of five (5) years and may be extended for such further period as may be agreed by the Parties in writing.

- 5.2 Notwithstanding clause 5 (1) above, this MoU may be terminated by either Party giving written notice to the other at least six (6) months prior to the proposed date of termination.
- 5.3 Notwithstanding clause 5 (2) above, the provisions of this MoU or any other written agreement in respect of any on-going exchange programme or any other form of cooperative activity under this MoU shall continue to apply until their completion unless both Parties mutually agree in writing to the earlier termination of the programme or cooperative activity.

6. NOTICES

Every notice, request or any other communication required or permitted to be given pursuant to this MoU shall be in writing and delivered personally or sent by registered or certified post or via air mail or via courier or facsimile or by e-mail (which shall be acknowledged by the other Party) to the Parties at their address and facsimile number as stated below:

If to UM. Faculty of Computer Science and Information Technology,
(FSKTM)
Universiti Malaya
Lembah Pantai,
50603 Kuala Lumpur, Malaysia.
Attention: Dr. Shivakumara Palaiahnakote
Email: shiva@um.edu.my
Tel. No: +603-79672505
Fax No. : +603-79579249

If to REVA. Rukmini Knowledge Park,
Kattigenahalli, Yelahanka,
BENGALURU – 560 064
Karnataka, India.
Attention: Dr. D V S Bhagavanulu
Email: dean.iq@reva.edu.in
Fax no.: +91 080 46966998

7. MISCELLANEOUS

- 7.1 This MoU may be modified, varied or amended at any time after due consultation and with the written agreement of both Parties.
- 7.2 This MoU is not intended to be legally binding. It merely expresses the intentions and understanding of the Parties, which will form the basis of any legally binding agreement to be drafted and executed in the future.
- 7.3 The Parties hereby agree that they are not bound exclusively by this MoU and shall be at liberty to enter into any separate agreements or arrangements with any third party without reference to the other Party.
- 7.4 The use of the name, logo and/or official emblem of any of the Parties on any publication, document and/or paper is prohibited without the prior written approval of either Party.

8. COUNTERPARTS, EXECUTION

This Memorandum of Understanding may be executed in one or more counterparts, each of which shall be deemed to be an original but all of which together shall constitute one and the same instrument. The Parties shall be entitled to rely upon delivery of an executed electronic copy of this Memorandum of Understanding.

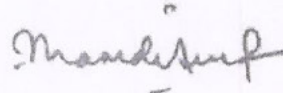
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IN WITNESS WHEREOF, the undersigned, being duly authorised by their respective organisations, sign this MoU on the date as above written.

UM

Signed by

For and on behalf of
UNIVERSITI MALAYA

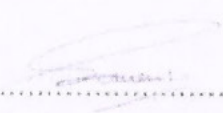


.....
Professor Dato' Ir. Dr. Mohd Hamdi Abd Shukor

Date

22 July 2021
.....

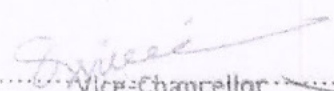
In the presence of


.....
Professor Datin Dr. Sameem Abdul Kareem
Dean
Faculty of Computer Science and Information Technology

REVA

Signed by

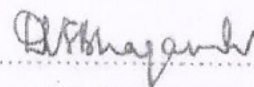
For and on behalf of
REVA UNIVERSITY


.....
Vice-Chancellor
REVA University, Rukmini Knowledge Park
Kattigenahalli, Yelahanka, Bengaluru-560 064
Dr. M. Mahanajaya
Vice-Chancellor

Date

23 July 2021
.....

In the presence of


.....
Dr. D V S Bhagavanulu
Dean – IQ & Dean, Faculty of Engineering & Technology

Dean, Internal Quality Assurance Cell (IQAC)
REVA University
Rukmini Knowledge Park, Kattigenahalli
Yelahanka, Bengaluru - 560 064


Registrar
REVA University
Bengaluru - 560 064



सत्यमेव जयते

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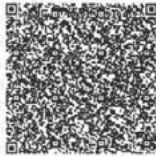
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MEMORANDUM OF UNDERSTANDING BETWEEN*

REVA UNIVERSITY (RU), BANGALORE, INDIA

AND

SRINIVAS UNIVERSITY (SU), BANGALORE, INDIA

Whereas REVA UNIVERSITY, established under the REVA University Act 2012, the University is recognised by the University Grants Commission (UGC) and is approved by the AICTE (All India Council for Technical Education). REVA University prides itself in contributing to every student's

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holistic development. The University currently offers multi-disciplinary Bachelor, Master and Research level Programmes in Arts, Social Sciences, Sciences, Commerce, Management, Education, Law, Engineering, performing arts and Architecture having its Main Campus at Kattigenahalli, Yelahanka, Bengaluru, Karnataka – 560064, India (hereinafter referred to as 'RU') and

Whereas SRINIVAS UNIVERSITY (SU), Mangalore, is a Private university, Research and skill focused University in Mangalore, Karnataka, India established in 2013 by Karnataka State Act.

Presently, SU offers undergraduate, postgraduate, and research courses under 10 Faculties/Colleges with about 160 courses. The University made innovations in designing and starting new super speciality programmes both in UG, and PG level as per present and future industry relevance, innovations in examination system through focus on continuous evaluation and to make it fool proof. The University has established networking with many industries, universities, and Education service providers to substantially improve the quality and weightage of the courses and degrees respectively. Presently Srinivas University has Ten Colleges offering innovative industry oriented specialized courses of UG, PG, and Research levels. Research at SU is pursued broadly under three divisions: Biological Sciences, Physical Sciences, Engineering Sciences, Material Sciences and Chemical sciences (hereinafter referred to as the "SU")

Whereas as RU and SU (herein after jointly referred to as 'Parties') have agreed to enter into a researchcooperation to collaborate in research in multiple disciplines for mutual benefit to its constituent stakeholders, particularly for the Students and Faculty Members of the Parties

This Memorandum of Understanding (MOU) is entered to between the Parties which witnessed as hereunder.

Clause 1

- 1.1 The purpose of this MOU is to strengthen and to develop research cooperation, commercialization, enhancing knowledge and to promote mutual understanding between the Parties.

Clause 2

- 2.1 With the intention of implementing the goals of this Memorandum, the Parties have generally agreed to co-operate in the following areas:
- 2.1.1 Mutual exchange of the expertise of faculty and researchers for the benefit of PhD students, graduate and undergraduate students for the purposes of conducting high quality research and training.
- 2.1.2 Cooperation in enhancing knowledge level of faculty members (academic and research areas) in the fields of mutual interest.
- 2.1.3 Academic and research cooperation related to PhD/PG programmes, including joint proposal submission to suitable funding agency subjected to applicable statutory regulations applicable for either party.



Registrar

REVA University
Bengaluru - 560 064

- 2.1.4 Invitation of the representatives of the Parties to deliver lectures, exchange of experience and information regarding high-quality research in the area of Chemical Science, Materials sciences, Nanotechnology, Biotechnology and also on other relevant areas of Engineering Sciences
- 2.1.5 Organizing jointly the scientific and technical conferences, seminars, symposia, workshops etc.

Clause 3

3.1 The terms of the activities defined in the Clause 2 will be determined by separate agreements between the Parties.

Clause 4

4.1 The cost and expenses to be paid in relation to any co-operation or collaboration envisaged under this MOU shall be subject to further detail arrangements to be agreed between the Parties as and when it shall arise.

4.2 The Parties consider attracting potential financial partners, including funds if possible subject to statutory/regulatory restrictions if any.

Clause 5

5.1 This MOU may be amended or modified by a written additional agreement, which will be an undivided part of this MOU which must be properly exchanged duly signed by the representatives of either Party.

Clause 6

6.1 Both Parties agree to carry out these activities in accordance with the laws and regulations of the respective countries.

6.2 Disputes, arising in accordance with the Memorandum will be resolved by consultation and conversation between the Parties.

Clause 7

7.1 This MOU enters into validity and effect on the day of its signing by the statutory representatives of the Parties. It shall be effective for a period of Five (5) years and subject to review may be renewed for the next five (5) years unless it is terminated by either of the Parties upon prior notice to the other in writing of not less than 6 (six) months before the termination date. However, no such termination shall affect the continuity till completion of the already existing activities under the MOU.

Clause 8

8.1 Each Party shall have a Coordinator for the MOU who shall be responsible for organizing and implementing this MOU under Clause 2 above by connecting with appropriate Department/s of the Parties. The contact details of the coordinator shall be as stated herein and may be changed by the Parties at any time during the term of this MOU by communication in writing.

The Coordinators currently designated for the purpose are:

Coordinator at RU:

Name: Dr.Nagaraju D H
Title: Professor, Dept of Chemistry
Mobile: +91- 9900634435
Email: nagaraju.dh@reva.edu.in

Coordinator at SU:

Name: Dr Praveen B M
Title: Director - Research
Mobile: +91- 9980951074
Email: researchdirector@srinivasuniveristy.edu.in

Clause 9

9.1 This MOU will not be considered to be a contract creating legal or financial relationships between the parties. Rather, it will form the basis for entering into specific agreement/s (which may include exchange of letters for specific purpose) designed to facilitate development and maintenance of a mutually beneficial academic relationship.

Clause 10

10.1 Each Party shall preserve, keep strictly confidential for exclusive purposes of this MOU and shall not disclose to any third party any Confidential Information that they may access by virtue of this MOU or by any agreement arising there from except to the extent that such disclosure is mandated by any applicable Law or Court or Administrative Order.

Clause 11

11.1 Both parties are responsible for their own costs in relation to this MOU unless otherwise agreed.


Clause 12

12.1 This Memorandum is prepared in English in two copies, one for each Party, both having the same binding.

This MOU is signed by the duly authorised officials of the Parties on the day first mentioned hereinabove



RU (REVA UNIVERSITY)
By Vice Chancellor **Dr. M. Dhanamjaya**

Date: 25/04/22
E-mail: vc@reva.edu.in
Website: www.reva.edu.in

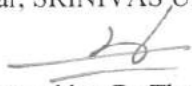

SU (SRINIVAS UNIVERSITY)
By Vice Chancellor: **Dr. P.S. Aithal**

Date: 25/04/2022
E-mail: vicechancellor@srinivasuniversity.edu.in
Website: <https://srinivasuniversity.edu.in/>


1. Witnessed by: **Dr. RAMESH N**
Registrar, REVA University


2. Witnessed by: **Dr. Madhusudana Reddy MB**
Professor & Head Department of Chemistry


1. Witnessed by: **Dr Anil Kumar**
Registrar, SRINIVAS UNIVERSITY


2. Witnessed by: **Dr Thomas Pinto**
Dean (Engineering), SRINIVAS UNIVERSITY


Registrar
REVA University
Bengaluru - 560 064

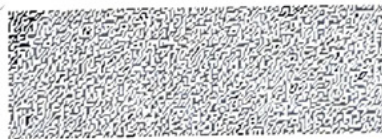
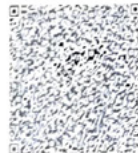


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Description of Document : Article 12 Bond
Description : AGREEMENT
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GENERAL AGREEMENT FOR RESEARCH COOPERATION

This General Agreement for Research Cooperation (hereinafter referred to as "**Agreement**") is executed on this 8th day of August, 2022 by and between:

Manipal Academy of Higher Education, a deemed to be University under Section 3 of the UGC Ac, 1956, having its registered office at Madhav Nagar, Manipal - 576 104, Karnataka, on behalf of its constituent unit **Kasturba Medical College, Manipal (KMC)** and represented by its Registrar, Dr. Narayana Sabhhahit (hereinafter collectively referred



Sabhhahit

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Registrar
REVA University
Bengaluru - 560 064

AND

REVA UNIVERSITY, a private institution of higher learning established and registered in India under the REVA University (Act 2012) with its registered address at Rukmini Knowledge Park Kattigenahalli, Yelahanka, Bangalore 560064 Karnataka, India (hereinafter referred to as "REVA"), of the one part

Whereas -

- A. MAHE, an Institute of Eminence and deemed to be University, provides higher education and research in various disciplines, through its constituent units.
- B. The REVA University imparts education and offers programs and courses leading to Graduate, Post-graduate, PhD and such other Degrees, Diplomas and Certificated as provided in its objectives and functions. The campus is located at Rukmini Knowledge Park, Kattigenahalli, Yelahanka, Bangalore-64 has well-furnished infrastructure facilities for academic and research activities. The University always strives to maintain quality and high standards of education and promotes students to develop their overall personality to become good citizens in the country.
- C. Both Parties have full legal capacity to establish commitments and their common mission includes cooperation in research and development opportunities for its employees and researchers as well as promoting academy-corporate research collaborations;
- D. Both Parties consider the promotion and support of innovation and research, and product / process development to be of primary importance in the fulfillment of their common objectives;

Now, Therefore, the Parties agree to promote mutual cooperation in innovation and research, product and process development, etc., according to the following clauses:

FIRST: This Agreement shall establish the criteria under which the Parties shall carry out joint collaborative activities of mutual interest. REVA is interested to work with a few institutions of MAHE on various specific projects as and when required.

SECOND: Both Parties agree to pursue the following forms of cooperation, within areas that are mutually acceptable:

- a) Academics, students exchange, research and intellectual property rights
- b) Parties would like to develop certain products or assays under specific co-development projects.



Sekharit

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Registrar
REVA University
Bengaluru - 560 064

- c) Parties would explore revenue sharing model for specific projects of commercial interest.
- d) The Parties affiliation shall be cited in all publications arising out of the collaboration.
- e) All Intellectual Property developed under the collaboration (specific development project) shall be co-owned by the Parties.
- f) Any other mutually agreed activity that would benefit both the Parties

THIRD: All proposed projects, programs or work agreements including financials and anything contemplated under a) through g) above, arising from this Agreement, shall be implemented as "Specific Agreements" of collaboration after they have been agreed upon and duly authorized by the official representatives of both Parties.

FOURTH: All cooperative activities associated with research and development and other programs shall be consistent with good legal standing of both Parties.

FIFTH: Any employee or researcher associated with this Agreement shall comply with all the legal and administrative requirements. The specific requirements for the visits, as well as the financial implications for each Party shall be approved in writing by duly authorized personnel of each Party.

SIXTH: Each Party shall designate its own personnel to administer the activities associated with this Agreement, as well as the development and implementation of any Specific Agreement. The personnel designated by each Party to implement activities that arise from this Agreement shall hold current employment with the respective Party, and shall be solely responsible to the Party by which they are employed. For MAHE, Dr Mamatha Ballal, Professor of Microbiology shall serve as the liaison officer. Any changes shall be communicated to the Parties promptly.

SEVENTH: This Agreement shall become valid upon signature by both Parties and shall remain in effect for a period of three (3) years from its effective date. This Agreement may be amended at any time by a written agreement signed by the authorized representatives of both Parties.

EIGHTH: This Agreement may be terminated by either Party upon three (3) months prior written notice to the other Party; however, termination shall not affect the implementation of activities that have already commenced pursuant to a Specific Agreement. Those Specific Agreements shall remain in effect until the required associated activities are completed.



Subhahit

[Signature]

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Registrar
REVA University
Bengaluru - 560 064

By signing this document, the Parties acknowledge that they have reviewed and understand the content and extent of each of its clauses, and agree to carry out the actions necessary to implement it.

Signed on behalf of
Manipal Academy of Higher Education

Signed on behalf of
REVA UNIVERSITY





Name: Dr. Narayana Sabhahit
Designation: Registrar



Name: Dr. M. Dhanamjaya
Designation: **Vice-Chancellor**
REVA University, Rukmini Knowledge Park
Kattigenahalli, Yelahanka, Bengaluru - 560 064
Witness:

Witness:



Name: Dr Mamatha Ballal
Designation: Professor of Microbiology
Incharge – Enteric Diseases Division
KMC, Manipal

DR. MAMATHA BALLAL, Ph.D., FIMSA
PROFESSOR OF MICROBIOLOGY
ENTERIC DISEASES DIVISION - HEAD
KASTURBA MEDICAL COLLEGE
MANIPAL ACADEMY OF HIGHER EDUCATION
MANIPAL, KARNATAKA, INDIA - 576 104



Name: Dr. P. Visweswara Rao
Designation: Director, International
Relations and Research Collaborations

Dr. P Visweswara Rao
Ph.D. FAPAS, FMSA
Professor and Director
International Relations &
Research Collaborations
Department of Administration.



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First Party : REVA UNIVERSITY
Second Party : DR BUDDOLLA S INSTITUTE OF LIFE SCIENCES
Stamp Duty Paid By : REVA UNIVERSITY
Stamp Duty Amount (Rs.) : 100
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MEMORANDUM OF UNDERSTANDING

This Memorandum of Understanding (MoU) is made and executed at Bengaluru on 23.02.2023 between:

REVA University, Rukmini Knowledge Park, Kattigenahalli, Yelahanka, Bengaluru – 560 064,

AND

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B. Y. Swarnath
DIRECTOR
Dr. Buddolla's Institute of Life Sciences


Deputy Director
School of Applied Sciences
REVA University Rukmini Knowledge Park
Kattigenahalli, Yelahanka, Bengaluru - 560 064
Registrar
REVA University
Bengaluru - 560 064

Statutory Alert:
TIRUPATI-517502, A.P, INDIA

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2. The onus of checking the legitimacy is on the users of the certificate.
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Dr.Buddolla's Institute of Life Sciences, 9-106/5, Renigunta Road, Damedu Village, Near Narayanadri Hospital, Tirupati, Andhra Pradesh- 517 503,

PRELUDE:

REVA UNIVERSITY, a private institution of higher learning established and registered in India under the REVA University (Act 2012) with its registered address at Rukmini Knowledge Park, Kattigenahalli, Yelahanka, Bengaluru – 560 064, Karnataka, India (hereinafter referred to as “**REVA**”), of the one part

The University imparts education and offers programs and courses leading to Graduate, Post- graduate, PhD and such other Degrees, Diplomas and Certificated as provided in its objectives and functions. The campus is located at Rukmini Knowledge Park, Kattigenahalli, Yelahanka, Bengaluru – 560 064 has well-furnished infrastructure facilities for academic and research activities. The University always strives to maintain quality and high standards of education and promotes students to develop their overall personality to become good citizens in the country.

Dr.Buddolla's Institute of Life Sciences (hereinafter referred to as “**DrBILS**” which term and expression shall mean and include its nominees and permitted assigns), of the **OTHER PART**.

Dr.Buddolla's Institute of Life Sciences and REVA hereinafter referred to singularly as “the Party” and collectively as “the Parties”

WHEREAS the Parties:-

DESIRING to strengthen and further develop the friendly relations between the Parties in the field of academic programmes related to medicine, applied sciences and engineering courses;

APPRECIATING the importance of enhancing tertiary education for economic development as well as a means to further develop the ties between both Parties;

CONVINCED of the necessity for a lasting and effective cooperation in the interest of the Parties; and

BELIEVING that such cooperation would serve their common interests and contribute to the enhancement of tertiary education for the benefit of both Parties.

NOW BOTH PARTIES HAVE AGREED as follows:

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DIRECTOR
Dr. Buddolla's Institute of Life Sciences
Dr. Buddolla's Educational Society
TIRUPATI-517502, A.P, INDIA.


Deputy Director
School of Applied Sciences
REVA University, Rukmini Knowledge Park
Kattigenahalli, Yelahanka, Bengaluru - 560 064
Registrar
REVA University
Bengaluru - 560 064

ARTICLE I

OBJECTIVE

The Parties, subject to the terms of this MoU and the laws, rules, regulations and national policies, of each Party from time to time in force, agree to strengthen, promote and develop cooperation in tertiary education, as well as the development of activities and technologies for the purpose of mutual recognition and to address the critical national needs.

ARTICLE II


AREAS OF CO-OPERATION


1. Each Party will, subject to the laws, rules, regulations, procedures and national policies from time to time in force governing or relating to the subject matter of this MoU, endeavour to take necessary steps to encourage and promote co-operation in the following areas :-

Academics:

- a) Dr.Buddolla's Institute of Life sciences shall explore the possibilities of offering internships/project training to students of REVA University in the field of Biotechnology/ Life Science domain here after. The course modules to be offered and logistics would be discussed and decided mutually by both the parties.
- b) Dr.Buddolla's Institute of Life sciences shall allow REVA University students for institute visit as per the convenience and feasibility.
- c) Dr.Buddolla's Institute of Life sciences shall support to organize faculty development programs to the academic faculty members from REVA University as per the feasibility and mutually understanding.
- d) Both the parties shall mutually exchange any relevant information on research, and scientific programs.
- e) Dr.Buddolla's Institute of Life sciences shall offer Research projects/Internships and training programs (Skill Development Programs) for Under Graduate, Post Graduate Students and Research scholars of REVA University in accordance with its policies on mutually agreed upon by both the parties.
- f) Both the parties shall jointly organize seminars, conferences, or workshops on topics of mutual interest and to invite each other's Scientists/Faculty and Staff to participate therein.

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DIRECTOR
Dr. Buddolla's Institute of Life Sciences
Dr. Buddolla's Educational Society
TIRUPATI-517502, A.P, INDIA.


Deputy Director
School of Applied Sciences
REVA University, Rukmini Knowledge
Kattigenahalli, Yelahanka, Bengaluru
Registrar
REVA University
Bengaluru - 560 064

- g) Dr.Buddolla's Institute of Life sciences shall support academic programs (Industry integrated curriculum designing, External BoS member/Advisory Board Members/Visiting Faculty etc.,) for Post Graduate students/Scholars of REVA University in accordance with policies mutually agreed upon by both the parties.

Research:

- a) Under this MoU both Parties will meet on an annual basis to identify areas of research and development, training that can be efficiently addressed through a collaborative approach. R&D programs and training programs will be carried out at Dr.Buddolla's Institute of Life sciences & REVA at their facilities in REVA and Dr.Buddolla's Institute of Life sciences in Life Science.
- b) Jointly identify research areas and topics, and prepare and submit research proposals to the various funding agencies.
- c) Participate in joint technical activities (e.g., technical inspections, workgroups, scientific or engineering panels) with representatives from REVA and Dr.Buddolla's Institute of Life sciences other organizations which may be established to provide technical advice and guidance on issues related to the national needs.
- d) Be in contact and prepare an annual report of all Research work related to the joint or collaborative activities conducted by the two organizations.
- e) Both the parties shall allow UG and PG students, research scholars and faculty members of REVA University who wish to pursue a part of their research work to utilize infrastructure facilities at their premises. The work shall be carried out during a mutually agreed time period and associated costs.
- f) Both the parties shall get involved in consultancy activities concerned to commercial projects and academic research for a nominal fee determined on case-by-case basis between both parties. Dr.Buddolla's Institute of Life sciences and REVA may nominate members of their respective staff to work out the practical details of cooperation between the two organizations and in general, to ensure proper and effective implementation of this MOU


- g) Such details as agreed upon will be confirmed by exchange of letters between Dr.Buddolla's Institute of Life sciences and REVA and such letters will be part of this agreement. Any such research and academic activities require approval of both the parties for implementation.
2. For the purpose of implementing the co-operation in respect of any area stated in paragraph 1, the Parties will enter into a legally binding agreement subject to terms and conditions as mutually agreed upon by the Parties.
 3. The Parties will have the right to use and publish any information derived from implementing the cooperation in respect of any area stated in paragraph 1 provided that written consent is obtained from the other Party. In the event that one Party wishes to publish, disclose and/or present (in any form of disclosure) the data and/or the outcomes arising from this Memorandum of Understanding, the Party will submit a draft of each such publication or presentation to the other Party and give the right to have certain parts of the said publication or presentation to be removed or amended by the other Party itself. In any such publication, the contribution of the Parties will be acknowledged.

ARTICLE III

PROJECT STEERING COMMITTEE

1. The Parties will establish a Project Steering Committee (hereinafter referred to as "Project Steering Committee") to review the implementation of this Memorandum of Understanding between the two Parties.
2. The Project Steering Committee will consider ways and means to promote the aforesaid objective and to ensure the proper coordination and implementation of its decisions and/or recommendations. The Project Steering Committee will also review the progress of the implementation of all understandings concluded between the Parties within the framework of this MoU and take steps to ensure the active and prompt implementation of the understandings.
3. The Project Steering Committee will be chaired by the Director of the Dr.Buddolla's Institute of Life sciences and by the Administrator of REVA or alternatively Vice Chancellor of REVA or Registrar or Director, International Relations and Research Collaborations, with participation by other relevant stakeholders of the Parties as appropriate and mutually agreed upon by the Parties.

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B. Viswanath,
DIRECTOR
Dr. Buddolla's Institute of Life Sciences
Dr. Buddolla's Educational Society
TIRUPATI-517502, A.P, INDIA.


Deputy Director
School of Applied Sciences
Registrar
REVA University, Rukmini Krishna Park
Kattigenahalli, Yelahanka, Bengaluru - 560 064

4. The Project Steering Committee will meet at a date and venue convenient to and decided upon by the Parties.
6. The composition and procedure of the Project Steering Committee will be jointly decided upon by the Parties.
7. The decisions and other conclusions of the Project Steering Committee will be reflected in the minutes of the meeting and the Parties will take appropriate steps to implement these decisions and conclusions as soon as practicable.

ARTICLE IV

IMPLEMENTATION

In the implementation of this MoU, **Dr.Buddolla's Institute of Life sciences** and **REVA** will arrange the details of any activities to be carried out, recognizing that the exchange of any staff or materials will not necessarily be simultaneously reciprocal.

ARTICLE V


FINANCIAL ARRANGEMENTS

1. This MoU will not give rise to any financial obligation by one Party to other.
2. Each Party will bear its own cost and expenses in relation to this MoU.

ARTICLE VI

INTELLECTUAL PROPERTY RIGHTS


1. **New Intellectual Property developed by Dr.Buddolla's Institute of Life sciences:** All Intellectual Property made, developed, conceived, first reduced to practice, fixed in any tangible medium of expression, or created independently by SRI, without any contribution from REVA of any kind during the term of this MoU ("Dr.Buddolla's Institute of Life sciences New Intellectual Property"), will be the sole and exclusive property, including the entire right, title and interest of Dr.Buddolla's Institute of Life sciences.


DIRECTOR
Dr. Buddolla's Institute of Life Sciences
Dr. Buddolla's Educational Society
TIRUPATI-517502, A.P. INDIA.

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Deputy Director
School of Applied Sciences
Registrar
REVA University, Rukmini Knowledge Campus
Kattigenahalli, Yelahanka, Bengaluru-560 064


2. **New Intellectual Property developed by REVA:** All Intellectual Property made, developed, conceived, first reduced to practice, fixed in any tangible medium of expression, or created independently by REVA without any contribution from SRI of any kind during the term of this MoU (“REVA New Intellectual Property”), will be the sole and exclusive property, including the entire right, title and interest of REVA.
3. **Joint Intellectual Property:** All Intellectual Property jointly made, developed, conceived, first reduced to practice, fixed in any tangible medium of expression or created by Dr.Buddolla’s Institute of Life sciences and REVA during the term of this MoU (“Joint Intellectual Property”), will be the joint property of and the entire right, title and interest is hereby assigned jointly to Dr.Buddolla’s Institute of Life sciences and REVA, and each party may enjoy all rights and privileges accorded ownership of such joint property.
4. **Assignment of Joint Intellectual Property:** Each party hereby assigns and agrees to assign to the other party, or its designees, an undivided one-half its full right, title and interest in and to all Joint Intellectual Property. Each party agrees that, during the term of this MoU and subsequent to the completion or termination of this MoU, they will, at the other party’s request and expense, execute any and all applications for Indian and foreign patents, copyrights or other rights and otherwise provide assistance (including, but not limited to, the execution and delivery of instruments of further assurance or confirmation) to assign an undivided one-half interest in said Joint Intellectual Property to the other party and to permit the other party to enforce any patents, copyrights or other rights in and to said subject intellectual property. All copyrightable works that are created pursuant to performance under this MoU shall be considered “works made for hire” as defined by Copyright Law.
5. **Filings:** The parties agree not to file any patent, trademark, or copyright applications relating to Joint Intellectual Property, without first notifying the other party.


DIRECTOR
Dr. Buddolla's Institute of Life Sciences
Dr. Buddolla's Educational Society
TIRUPATI-517502, A.P. INDIA.


Page 7 of 12


Deputy Director
School of Applied Sciences
Registrar
REVA University
REVA University, Rukmini Knowledge Park
Kattigenahalli, Yelahanka, Bengaluru - 560 064

6. **Disclosure:** Each of the parties shall promptly and fully disclose to the other party all Joint Intellectual Property and shall identify and maintain records of Joint Intellectual Property, and a copy of all such records shall be promptly provided to the other party. Such records shall be considered Confidential Information and subject to the provisions of this MoU.
7. **Transfer, Assignment and Waiver.** Each of the parties represents, warrants and covenants that any Joint Intellectual Property will be created solely by their respective Personnel acting within the scope of their employment, or under a written independent contractor MoU assigning Intellectual Property rights.
8. **Moral Rights:** With respect to Joint Intellectual Property that qualifies as original works of authorship under the copyright laws (either Indian or foreign), if any moral rights (either Indian or foreign) are created, each party hereby waives and shall cause its Personnel to waive such rights in the Joint Intellectual Property.
9. **Joint Prosecution:** Each party agrees to perform all acts that the other party may reasonably request to assist in obtaining the full benefits, enjoyment, rights, title, and interest in India and throughout the world, in the Joint Intellectual Property. Such acts shall include, without limitation, execution of documents, assistance in the prosecution of patents, copyrights, trademarks, and trade secrets. The parties shall each bear their own expenses under this Section.
10. **Attorneys-in-Fact.** In the event that a party is unable to secure the signature of the other party, any of its Personnel, or its other legal representative, to any lawful document required to apply for or enforce any of Joint Intellectual Property, for whatever reason, each party hereby irrevocably appoints the other party and its duly authorized officers and agents as the other party's agents and attorneys-in-fact to apply for or enforce Joint Intellectual Property with the same legal force and effect as if executed by the other party, its Personnel, or its other legal representative.


DIRECTOR
Dr. Buddolla's Institute of Life Sciences
Dr. Buddolla's Educational Society
TIRUPATI-517502. A.P. INDIA.

Page 8 of 12


Deputy Registrar
School of Applied Sciences
REVA University, Rukmini Knowledge
Kattigenahalli, Yelahanka, Bengaluru - 560 064
Registrar
REVA University
Bengaluru - 560 064

11. **Joint Enforcement.** Upon learning of any infringement of Joint Intellectual Property, from any source, the parties shall first determine if they desire to jointly take action to suppress or eliminate such infringement. If the parties decide to take such action jointly, the parties agree that they will share equally in the expenses related to such actions, and share equally in any recovery as a result of such action.
- SRI shall have the sole right to direct such joint action. In the event that either party decides not to participate in such action, the other party shall have sole discretion to take whatever action it determines is necessary or appropriate under the circumstances, including without limitation legal action to suppress or eliminate any such infringement, at the acting party's expense. The non-acting party agrees to cooperate with the acting party in such action and the acting party agrees that it will reimburse the non-acting party's reasonable and actual expenses incurred in such action. The acting party retains all recovery from such action.
12. **Arbitration.** The parties agree to arbitrate any dispute or controversy regarding whether intellectual property should be considered Joint Intellectual Property, Dr. Buddolla's Institute of Life sciences New Intellectual Property or REVA New Intellectual Property under the Arbitration Rules of Indian Legal system.

ARTICLE VII

CONFIDENTIALITY


1. Each Party undertakes to observe the confidentiality and secrecy of documents, information and other data received from, or supplied to the other Party during the period of the implementation of this MoU or any other agreements made pursuant to this MoU .
2. The Parties agree that the provisions of this Article will continue to be binding between the Parties notwithstanding the termination or suspension of this MoU.


ARTICLE VIII

SUSPENSION

Each Party reserves the right for reasons of national security, national interest, public order or public health to suspend temporarily, either in whole or in part, the implementation of this MoU which suspension shall take effect immediately after written notification has been given to the other Party.

Page 9 of 12


DIRECTOR
Dr. Buddolla's Institute of Life Sciences
Dr. Buddolla's Educational Society
TIRUPATI-517502, A.P. INDIA,


Deputy Registrar
School of Applied Sciences
REVA University, Rukmini Knowledge Park,
Kattigenahalli, Yelahanka, Bengaluru-560 064
Registrar
REVA University
Bengaluru - 560 064

ARTICLE IX

REVISION, MODIFICATION AND AMENDMENT

1. Either Party may request in writing a revision, modification or amendment of all or any part of this MoU.
2. Any revision, modification or amendment agreed to by the Parties will be reduced into writing and shall form part of this MoU.
3. Such revision, modification or amendment will enter into force on such date as may be determined by the Parties.
4. Any revision, modification or amendment will not prejudice the rights and obligations arising from or based on this MoU before or up to the date of such revision, modification or amendment.

ARTICLE X

SETTLEMENT OF DISPUTES


Any difference or dispute between the Parties concerning the interpretation and/or implementation and/or application of any of the provisions of this MoU will be settled amicably through mutual consultation and/or negotiations between the Parties, without reference to any third party or international tribunal.


ARTICLE XI

ENTRY INTO FORCE, DURATION, CONTINUATION AND TERMINATION

1. This MoU will come into force on the date of signing and will remain in force for a period of five (5) years or as and when both the parties mutually agree to depart from MoU.
2. Notwithstanding anything in this Article, either Party may terminate this MoU by notifying the other Party of its intention to terminate this MoU by a notice in writing, at least three (3) months prior to its intention to do so.
3. Based on the performance of both the parties with continuous activities, the MoU can be extended for THREE (3) more years for the benefit of both the parties.
4. The termination of this MoU will not affect the implementation of on-going activities and/or programmes which have been agreed upon before the date of the termination of this MoU.

Page 10 of 12


DIRECTOR
Dr. Buddolla's Institute of Life Sciences
Dr. Buddolla's Educational Society
TIRUPATI-517502, A.P. INDIA.


Deputy Director
School of Applied Sciences
REVA University, Rukmini Knowledge Park
Kattigenahalli, Yelahanka, Bengaluru
Registrar
REVA University
Bengaluru - 560 064

ARTICLE XII

APPLICABLE LAW

This Agreement is subject to the laws of Republic of India and the courts of Bengaluru, Karnataka, India shall have the exclusive jurisdiction.

ARTICLE XIII

NOTICE

1. Any notice required to be given pursuant to this Agreement shall be in writing and may be delivered or posted by ordinary mail, postage prepaid, to the Party to which such notice is required to be given under this Agreement at the address below.

To REVA University

Dr. Damodhara Reddy
Associate Professor,
Department of Biotechnology
School of Applied Sciences
REVA University
Bengaluru 560064 Karnataka, India
Telephone no.: +91-80-46966966
Email: damodara.reddyv@reva.edu.in

Alternatively

Dr. P. Visweswara Rao
Director, International Relations and Research Collaborations
REVA University
Rukmini Knowledge Park Kattigenahalli, Yelahanka,
Bengaluru 560064 Karnataka, India
Telephone no.: +91-80-46966966
Email: dir.ir@reva.edu.in



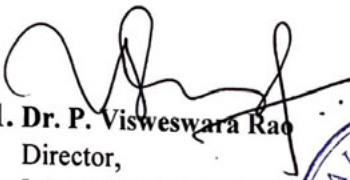



To

Buddolla Viswanath
Director
Dr. Buddolla's Institute of Life sciences,
Tirupati.

2. The addresses referred to in the preceding sub-clause may, from time to time, be changed by written notice.

3. Any notice given under this clause by post shall be deemed to have duly served at the expiration of three (3) clear days (i.e. excluding weekends or public holidays) after the time of such posting and production of any official post office receipt showing the time and date of posting shall be conclusive evidence of the time and date of posting.

IN WITNESS WHEREOF, the Parties have caused this Memorandum of Understanding to be executed in their respective names by their duly authorized representatives.

On behalf of REVA UNIVERSITY, Bengaluru. Signed by	On behalf of Dr. Buddolla's Institute of Life Sciences, Tirupati. Signed by
 Dr. M. Dhanamjaya Vice-Chancellor REVA University, Rukmini Knowledge Park Kattigenahalli, Yelahanka, Bengaluru-560 064 REVA University	 Dr B Viswanath DIRECTOR Dr. Buddolla's Institute of Life Sciences Dr. Buddolla's Educational Society TIRUPATI-517502, A.P. INDIA.
Witness:  1. Dr. P. Visweswara Rao Director, International Relations and Research Collaborations, REVA University	Witness:  1. Dr. Ankireddy Seshadri Reddy Registrar Dr. Buddolla's Institute of Life Sciences REGISTRAR Dr. Buddolla's Institute of Life Sciences TIRUPATI - A.P. INDIA
 2. Prof. Shilpa B.R Deputy Director, School of Applied Sciences, School of Applied Sciences REVA University REVA University, Rukmini Knowledge Park Kattigenahalli, Yelahanka, Bangalore - 64	 2. Dr. T. Naveen Scientist C Dr. Buddolla's Institute of Life Sciences

Date: 23.02.2023.



सत्यमेव जयते

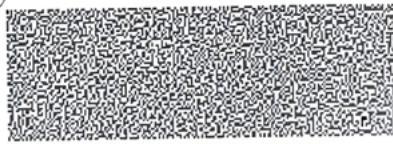
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Government of Karnataka



e-Stamp

Certificate No. : IN-KA55532770858636U
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Purchased by : REVA UNIVERSITY BANGALORE
Description of Document : Article 4 Affidavit
Description : AFFIDAVIT
Consideration Price (Rs.) : 0
(Zero)
First Party : REVA UNIVERSITY BANGALORE
Second Party : KARNATAKA COLLEGE OF PHARMACY BANGALORE
Stamp Duty Paid By : REVA UNIVERSITY BANGALORE
Stamp Duty Amount(Rs.) : 100
(One Hundred only)



Please write or type below this line

MEMORANDUM OF UNDERSTANDING

This Memorandum of Understanding (MoU) is made and executed at Bangalore on
01.06.2022 between:

**Department of Biotechnology, School of Applied Sciences, REVA University, Rukmini
Knowledge Park, Kattigenahalli, Bangalore – 560064**

AND

**Karnataka College of Pharmacy, 33/2, Thanisandra Main Rd, Chokkanahalli, Bengaluru,
Karnataka 560064**

Page 1 of 4

Statutory Alert:

1. The authenticity of this Stamp certificate should be verified at www.shicstamp.com or using e-Stamp Mobile App of Stock Holding. Any discrepancy in the details on this Certificate and as available on the website / Mobile App renders it invalid.
2. The onus of checking the legitimacy is on the users of the certificate.
3. In case of any discrepancy please inform the Competent Authority.

PRELUDE:

REVA University (hereafter referred to as RU) has been established by the Act of Government of Karnataka as a REVA University Act, 2012 as a Private University and notified Karnataka State Gazette notification No.80 SAMVYASHAE SHASANA 2012 Bangalore dated 7th February 2013 and has been recognized by UGC as per section 2(A) of UGC Act. The University imparts education and offers programs and courses leading to Graduate, Post- graduate, PhD and such other Degrees, Diplomas and Certificated as provided in its objectives and functions. The campus is located at Rukmini Knowledge Park, Kattigenahalli, Yelahanka, Bangalore-64 has well-furnished infrastructure facilities for academic and research activities. The University always strives to maintain quality and high standards of education and promotes students to develop their overall personality to become good citizens in the country.

Karnataka College of Pharmacy (hereinafter referred to as “**Second Party**” which term and expression shall mean and include its nominees and permitted assigns), of the **OTHER PART**.

PREAMBLE:

Memorandum of Understanding between **REVA University**, Rukmini Knowledge Park, Kattigenahalli, Bangalore – 560064 and **Karnataka College of Pharmacy**., represented by its undersigned of the one part and represented by its undersigned of the other part:

RECITALS:

Where, REVA University and Karnataka College of Pharmacy., shall be hereinafter jointly referred to the parties and singularly as party.

The parties have decided to agree to establish academic and research collaborations in the areas of mutual interest and in accordance with terms and conditions set forth in this Memorandum of Understanding (MoU). Both the parties agree on the following activities:

Academics:

1. Both the parties shall explore the possibilities of cooperative activities in the field of Life Science domain here after
2. Both the parties shall mutually exchange any relevant information on teaching, research, and scientific education programs.
3. Both the parties shall offer Academic / Research projects/Internships and training programs relevant to both parties.

4. Both the parties shall jointly organize seminars, conferences, or workshops on topics of mutual interest and to invite each other's Faculty and Staff to participate therein.
5. Both the parties shall exchange resources useful to each other to extend themselves to excel in academic and research activities.
6. Both the parties mutually plan and execute programs periodically which can be put on papers for authenticity.

Research:

1. Faculty, Research Scholars and PhD candidates of both institutions will be encouraged to apply for sponsored or funded projects keeping in view the interests and philosophies of the respective organizations.
2. Both the parties shall get involved research related activities like paper publications, product development, consultancy activities, project proposals for funding agencies and any other activities with mutual cooperation.

Intellectual Property Right:

1. Any work/products that the parties agree, arise out of or in relation to the research work, joint projects, and course as a result of their joint efforts, shall belong to both the parties.

Under this MoU signed by RU and Karnataka College of Pharmacy Bangalore, both the parties agreed to establish principles for collaboration and to develop mutually beneficial academic programs.

DURATION AND TERMINATION OF THE MOU:

This MoU will take effect from the date it is signed by representatives of the parties. It will remain valid for three years and may be continued after suitable review and agreement. If either party is found violating the above-mentioned terms or conditions of the MoU, the other party may terminate the MoU by giving written notice of three months in advance. Once terminated, neither REVA University nor Karnataka College of Pharmacy, will be responsible for any losses, financial or otherwise, which the other party may suffer. In the event of termination of the agreement, the rights and obligations of the parties shall be settled by mutual discussions and consensus. However, obligations and commitments already contracted for and involving both parties be honored and continued by both parties until such commitments are completed.







ARBITRATION

Any disputes that arise between the parties shall be amicably resolved within Bangalore City limits.

ASSIGNMENT OF THE AGREEMENT

The right and/or liabilities arising to any party to this agreement shall not be assigned except with the written consent of the other party and subject to such terms and conditions as may be mutually agreed upon.

This MoU signed subjects to approval of the respective academic / administrative bodies as attested to this deed on 01.06.2022

<p>On Behalf of REVA University, Bengaluru. Signed by</p>	<p>On Behalf of Karnataka College of Pharmacy, Bengaluru. Signed by</p>
<p style="text-align: center;"></p> <p>Shilpa BR Deputy Director School of Applied Sciences REVA University, Bengaluru</p>	<p style="text-align: center;"></p> <p>Dr. K Ramesh Director Karnataka College of Pharmacy, Bengaluru</p>
<p>Witness:</p> <p>1)  Dr. Ramya M.</p> <p>2)  Dr. Manjula KR</p>	<p>Witness:</p> <p>1)  Mrs. Kusu Susan Cyriac</p> <p>2)  Dr. Deepak Kumar Jha</p>

Place: Bengaluru

Date: 01.06.2022

MEMORANDUM OF UNDERSTANDING

The first party is KALSOFT SOLUTIONS PRIVATE LIMITED having its registered office at Office 116, First Floor, Vinayak Arcade, Opp. Of Bajaj Auto, Old Mumbai Pune Highway, Akurdi Pune, Maharashtra 411035 India and the second party REVA NEST, REVA University, Rukmini Knowledge Park, Kattigenahalli, Bengaluru - 560064.

Whereas both parties in this memorandum of understanding have jointly consented to initiate incubation program addressing research projects, identifying and applying for funding agencies, establishment of start-up at REVA NEST, Technology Business Incubator from 01st March 2021; whereas First Party on its part proposes to address the broad area of its interest, under this memorandum, and agrees to do the following:

1. Aim of Partnership:

Setting up of business / registered office

Access to REVA NEST network across business, mentors, funding agencies, government agencies

Access to REVA University student network for brand building, research, marketing, design work etc.

2. Infrastructure & other requirements from Second Party.

- Second Party will provide necessary infrastructure for office affairs, Working Space, Internet and Pantry to First Party through REVA NEST, Technology Business Incubation Center.
- First Party will use Amenities available in the Second Party such as Parking area, Pantry/ Food Court, Board Room, Conference rooms, and training rooms if required (based on availability and on free of cost basis).
- First Party can use Electronics Lab Equipment's, Embedded Labs, Measuring Instruments, Digital Boards, Development boards and other equipment's available with Second Party (based on availability and prior approval from concerned authorities).
- First Party can use Software tools, Programming tools, Simulators and other Software tools available with Second Party (Based on availability and prior approval from concerned authorities).
- First Party will get accessing to IEEE Library, Books Campus Library and Other Knowledge Sources available in the Second Party.

REVA -NEST (RAY Foundation), Technology Business Incubator, REVA University Campus, Bengaluru - 64

- Second Party will provide consultation to First Party in the required fields in order to achieve the Goal (consultation based on nominal fee).
- Second Party will Support First Party in Research and Development, Marketing and Technology Survey, Brand Building and Marketing (through consultancy and internship programs).

3. Sharing of profit & other terms

- First Party will work as independent Entity from Second Party
- **KALSOFT SOLUTIONS PRIVATE LIMITED** Can conduct training programs for REVA University students and the revenue generated through such training programs must be shared with REVA University in the ratio of 80:20 (80% for **KALSOFT SOLUTIONS PRIVATE LIMITED** and 20% for REVA University)
- First Party at present needs 4 seater work space and will pay accordingly (Rs. 3000/- per Seat / per month, inclusive of all applicable taxes).
- Second Party Account Details (Beneficiary Name: **REVA ASPIRING YOUTH FOUNDATION**, Bank Account Number: 6662000100010701, IFSC Code: **KARB0000666**, MICR CODE:560052072)
- If in future First Party receives any financial assistance directly from Second Party or any funding agencies through Second Party then separate agreement will be executed indicating the mode of repayment or sharing of ownership.
- The MoU is valid for period of **12 months** from the date of signing the agreement. It can be further extended (if required) upon mutual consent.

4. Internship Program

- First Party will provide internship opportunity to Graduates and Post Graduate students of Second Party.
- Duration and mode of Internship, Selection of Students, Interview, Certification, Compensation and Termination of Internship rights reserved by First Party

5. Recruitment Program

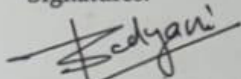
- First Party will hire Outgoing Deserved Students for different profiles available with them.
- Duration and mode of Job/Profile, Selection of Students, Interview, Certification, Compensation and Termination of resource rights reserved by First Party.
- First Party will keep rights to hire Employees from outside sources for different position on need basis; it includes both Part time and full time Employees

REVA –NEST (RAY Foundation), Technology Business Incubator, REVA University Campus, Bengaluru – 64

6. Other important points

- Both the parties to this understanding shall discuss and finalize the details of these and all the activities on mutual acceptance basis, from time to time.
- Both the parties consent to carry out all the obligations mutually agreed upon from time to time.
- Neither party will be liable to the other for any delay or in failure of performance of their respective obligations under this agreement caused by occurrences of force major events or other factors reasonably beyond the control of both parties. In such events, both the parties shall inform each other of the circumstances in writing.
- Any alteration, agenda or edition to the MOU can be made by mutual agreement on the same.
- Both parties consent to settle differences, if any, amicably by friendly consultations. Generally, such consultations will be between the signatories to this agreement. The decision made so will be binding on both parties.
- In case of termination of this MOU in any circumstances, both parties will ensure the existing students/faculty/staff are not affected with regard to ongoing training, projector any other activity.
- This MOU shall come into force on the date set forth on the first page here of and shall remain in force till termination of MOU and in full agreement of the foregoing conditions, both the parties sign as under and deliver copies to each other.
- The First Party agrees that he has read and understood all the terms & conditions mentioned in this MoU document as well as Annexure enclosed.

Signatures:



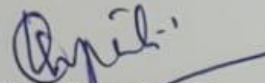
Mr. Pramod Kalyani
Director, Kalsoft Solutions Pvt. Ltd.



Dr. M. Dhanamjaya,
Pro - Vice Chancellor, Second Party, Bengaluru



Dr. N Ramesh
Registrar, Second Party, Bengaluru



Dr. Kiran Kumari Patil
Director, REVA-NEST, Bengaluru

REVA -NEST (RAY Foundation), Technology Business Incubator, REVA University Campus, Bengaluru - 64

MEMORANDUM OF UNDERSTANDING

The first party is BLIV Spaces Pvt. Ltd. having its registered office at 7102 Sobha Chrysanthemum Thanisandra main Road, Bengaluru - 560 077, Karnataka, INDIA and the second party REVA NEST, REVA University, Rukmini Knowledge Park, Kattigenahalli, Bengaluru - 560064.

Whereas both parties in this memorandum of understanding have jointly consented to initiate incubation program addressing research projects, identifying and applying for funding agencies, establishment of start-up at REVA NEST, Technology Business Incubator from 01st March 2021; whereas First Party on its part proposes to address the broad area of its interest, under this memorandum, and agrees to do the following:

1. Aim of Partnership:

Setting up of business / registered office

Access to REVA NEST network across business, mentors, funding agencies, government agencies

Access to REVA University student network for brand building, research, marketing, design work etc.

2. Infrastructure & other requirements from Second Party.

- Second Party will provide necessary infrastructure for office affairs, Working Space, Internet and Pantry to First Party through REVA NEST, Technology Business Incubation Center.
- First Party will use Amenities available in the Second Party such as Parking area, Pantry/ Food Court, Board Room, Conference rooms, and training rooms if required (based on availability and on free of cost basis).
- First Party can use Electronics Lab Equipment's, Embedded Labs, Measuring Instruments, Digital Boards, Development boards and other equipment's available with Second Party (based on availability and prior approval from concerned authorities).
- First Party can use Software tools, Programming tools, Simulators and other Software tools available with Second Party (Based on availability and prior approval from concerned authorities).
- First Party will get accessing to IEEE Library, Books Campus Library and Other Knowledge Sources available in the Second Party.

REVA -NEST (RAY Foundation), Technology Business Incubator, REVA University Campus, Bengaluru - 64

REVA UNIVERSITY
Rukmini Knowledge Park, Yelahanka
Post, Bengaluru-560064

™ +91 80 4696 6966
™ +91 80 6622 6645
www.reva.edu


Registrar

- Second Party will provide consultation to First Party in the required fields in order to achieve the Goal (consultation based on nominal fee).
- Second Party will Support First Party in Research and Development, Marketing and Technology Survey, Brand Building and Marketing (through consultancy and internship programs).

3. Sharing of profit & other terms

- First Party will work as independent Entity from Second Party
- BLIV Spaces Pvt. Ltd. Can conduct training programs for REVA University students and the revenue generated through such training programs must be shared with REVA University in the ratio of 80:20 (80% for BLIV Spaces Pvt. Ltd. and 20% for REVA University)
- First Party at present needs 2 seater work space and will pay accordingly (Rs. 3000/- per Seat / per month, inclusive of all applicable taxes).
- Second Party Account Details (Beneficiary Name: REVA ASPIRING YOUTH FOUNDATION, Bank Account Number: 6662000100010701, IFSC Code: KARB0000666, MICR CODE:560052072)
- If in future First Party receives any financial assistance directly from Second Party or any funding agencies through Second Party then separate agreement will be executed indicating the mode of repayment or sharing of ownership.
- The MoU is valid for period of **12 months** from the date of signing the agreement. It can be further extended (if required) upon mutual consent.

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- First Party will provide internship opportunity to Graduates and Post Graduate students of Second Party.
- Duration and mode of Internship, Selection of Students, Interview, Certification, Compensation and Termination of Internship rights reserved by First Party

5. Recruitment Program

- First Party will hire Outgoing Deserved Students for different profiles available with them.
- Duration and mode of Job/Profile, Selection of Students, Interview, Certification, Compensation and Termination of resource rights reserved by First Party.

REVA –NEST (RAY Foundation), Technology Business Incubator, REVA University Campus, Bengaluru – 64

REVA UNIVERSITY
Rukmini Knowledge Park, Yelahanka
Post, Bengaluru-560064

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☎ +91 80 6677 6645
www.reva.edu.in


Registrar

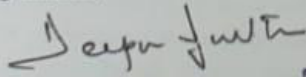
REVA University
Bengaluru - 560 064

- First Party will keep rights to hire Employees from outside sources for different position on need basis; it includes both Part time and full time Employees

6. Other important points

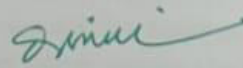
- Both the parties to this understanding shall discuss and finalize the details of these and all the activities on mutual acceptance basis, from time to time.
- Both the parties consent to carry out all the obligations mutually agreed upon from time to time.
- Neither party will be liable to the other for any delay or in failure of performance of their respective obligations under this agreement caused by occurrences of force major events or other factors reasonably beyond the control of both parties. In such events, both the parties shall inform each other of the circumstances in writing.
- Any alteration, agenda or edition to the MOU can be made by mutual agreement on the same.
- Both parties consent to settle differences, if any, amicably by friendly consultations. Generally, such consultations will be between the signatories to this agreement. The decision made so will be binding on both parties.
- In case of termination of this MOU in any circumstances, both parties will ensure the existing students/faculty/staff are not affected with regard to ongoing training, projector any other activity.
- This MOU shall come into force on the date set forth on the first page here of and shall remain in force till termination of MOU and in full agreement of the foregoing conditions, both the parties sign as under and deliver copies to each other.
- The First Party agrees that he has read and understood all the terms & conditions mentioned in this MoU document as well as Annexure enclosed.

Signatures: **For BLIV SPACES PVT LTD**



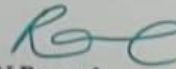
Mr. Deepak Sonthalia
Director, First Party

DIRECTOR

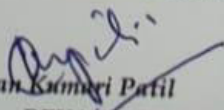


Dr. M. Dhanamjaya,
Pro - Vice Chancellor, Second Party, Bengaluru

Mr. Komal Kumar Meena
Director, First Party




Dr. N Ramesh
Registrar, Second Party, Bengaluru



Dr. Kiran Kumari Patil
Director, REVA-NEST, Bengaluru

REVA –NEST (RAY Foundation), Technology Business Incubator, REVA University Campus, Bengaluru – 64


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
Government of Karnataka

Rs. 100

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Description of Document	: Article 33 Memorandum of Association of a company
Description	: MOU
Consideration Price (Rs.)	: 0 (Zero)
First Party	: REVA UNIVERSITY
Second Party	: PWS HR CONSULTANCY
Stamp Duty Paid By	: REVA UNIVERSITY
Stamp Duty Amount(Rs.)	: 100 (One Hundred only)

सत्यमेव जयते


 Sri Balaji Balakedarara Sahakara Sanga Niyamitha
 No. 3, Taluk Panchayat Complex, MES Road,
 Next to Mini Vidhana Soudha,
 Yelahanka, Bengaluru-550064

Please write or type below this line

Lakshmi *Dinesh*


 Registrar
 REVA University
 Bengaluru - 550 064

This e-Stamp Certificate should be verified with the following link: www.e-stamp.karnataka.gov.in or using the e-Stamp State App of Andhra Pradesh.
 For more information, please visit the website: www.e-stamp.karnataka.gov.in or the website / Mobile App (pending) of Karnataka.



MEMORANDUM OF UNDERSTANDING

This Memorandum of Understanding (hereinafter called as the 'MOU') is entered into on this the 13th DAY OF – August – Two Thousand and Twenty-One (2021), by and between

REVA University, Bangalore, Karnataka, THE FIRST PARTY represented herein by its Vice Chancellor, Dr. M Dhanamjaya (hereinafter referred as 'First Party', the institution which expression, unless excluded by or repugnant to the subject or context shall include its successors – in-office, administrators, and assigns).

AND

PWS HR Consulting, and represented herein by its Zonal / Divisional Head, Pragati Mishra, (hereinafter referred to as "Second Party", company which expression, unless excluded by or repugnant to the subject or context shall include its successors – in-office, administrators, and assigns).

(First Party and Second Party are hereinafter jointly referred to as 'Parties' and individually as 'Party') as

WHEREAS:

- A) First Party & Second Party believe that collaboration and co-operation between themselves will promote more effective use of each of their resources and provide each of them with enhanced opportunities.
- B) The Parties intent to cooperate and focus their efforts on cooperation within area of Skill Based Training, Education and Research.
- C) Both Parties, being legal entities in themselves desire to sign this MOU for advancing their mutual interests.

NOW THEREFORE, IN CONSIDERATION OF THE MUTUAL PROMISES SET FORTH IN THIS MOU, THE PARTIES HERE TO AGREE AS FOLLOWS:

CLAUSE I

COOPERATION

- 1.1 Both Parties are united by common interests and objectives, and they shall establish channels of communication and co-operation that will promote and advance their respective operations within the Institution and its related wings. The Parties shall keep each other informed of potential opportunities and shall share all information that may be relevant to secure additional opportunities for one another.
- 1.2 First Party and Second Party co-operation will facilitate effective utilization of the intellectual capabilities of the faculty of First Party providing significant inputs to them in developing suitable teaching / training systems, keeping in mind the needs of the industry, the Second Party.
- 1.3 The general terms of co-operation shall be governed by this MOU. The Parties shall cooperate with each other and shall, as promptly as is reasonably practical, enter into all relevant agreements, deeds, and documents (the 'Definitive Documents') as may be required to give effect to the actions contemplated in terms of this MOU. The term of Definitive Documents shall be mutually decided between the Parties. Along with the Definitive

Pragati Mishra

Page 2 of 5

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Registrar
REVA University
Bengaluru - 560 064



Documents, this MOU shall represent the entire understanding as to the subject matter hereof and shall supersede any prior understanding between the Parties on the subject matter hereof.

**CLAUSE 2
SCOPE OF THE MoU**

- 21 The budding graduates from the institutions could play a key role in technological up-gradation, innovation and competitiveness of an industry. Both parties believe that close co-operation between the two would be of major benefit to the student community to enhance their skills and knowledge.
- 22 **Curriculum Design:** Second Party will give valuable inputs to the First Party in teaching / training methodology and suitably customize the curriculum so that the students fit into the industrial scenario meaningfully.
- 23 **Industrial Training & Visits:** Industry and Institution interaction will give an insight into the latest developments / requirements of the industries; the Second Party to permit the Faculty and Students of the First Party to visit its research centre and involve in Industrial Training Programs for the First Party. The industrial training and exposure provided to students and faculty through this association will build confidence and prepare the students to have a smooth transition from academic to working career. The Second Party will provide its Labs / Workshops / Industrial Sites for the hands-on training of the learners enrolled with the First Party.
- 24 **Research and Development:** Both Parties have agreed to carry out the joint research activities in the fields of - - **Sustainable Development**
- 25 **Skill Development Programs:** Second Party may train the students of First Party on the emerging technologies in order to bridge the gap and make them industry ready.
- 26 **Guest Lectures:** Second Party to extend the necessary support to deliver guest lectures to the students of the First Party on the technology trends and in house requirements.
- 27 Both Parties to obtain all internal approvals, consents, permissions, and licenses of whatsoever nature required for offering the Programme on the terms specified herein
- 28 There is no financial commitment between the two parties. If there is any financial consideration, it will be dealt separately.

**CLAUSE 3
INTELLECTUAL PROPERTY**

- 3.1 Nothing contained in this MOU shall, by express grant, implication, Estoppel or otherwise, create in either Party any right, title, interest, or license in or to the intellectual property (including but not limited to know-how, inventions, patents, copy rights and designs) of the other Party.

**CLAUSE 4
VALIDITY**

- 4.1 This Agreement will be valid until it is expressly terminated by either Party on mutually agreed terms, during which period PWS HR Consulting, the Second Party, as the case may be, will take effective steps for implementation of this MOU. Any act on the part of PWS

Page 2 of 5

Trishna

Trishna
Registrar
REVA University
Bengaluru - 560 064

HR Consulting, the Second Party after termination of this Agreement by way of communication, correspondence etc., shall not be construed as an extension of this MOU

4.2 Both Parties may terminate this MOU upon 30 calendar days' notice in writing. In the event of Termination, both parties have to discharge their obligations

**CLAUSE 5
MISCELLANEOUS**

5.1 The headings and sub-headings are inserted for convenience only and shall not affect the construction of this Agreement.

5.2 Both REVA University and PWS HR Consulting shall not, during the term of this Agreement directly or indirectly, solicit or offer employment or engagement to any of the personnel of other party without the prior consent in writing of that other party.

5.3 No failure to exercise and no delay in exercising, on the part of a Party, and right, remedy, power or privilege hereunder shall operate as a waiver thereof, nor shall any single or partial exercise of any right, remedy, power or privilege hereunder preclude any other or further exercise thereof or the exercise of any other right, remedy, power or privilege. The rights, remedies, power and privileges herein provided are cumulative and not exclusive of any right, remedies, powers and privileges provided by law.

5.4 After this Agreement has been signed, all preceding understandings/negotiations and correspondence pertaining to it shall become null and void.

**CLAUSE 6
RELATIONSHIP BETWEEN THE PARTIES**

6.1 It is expressly agreed that **First Party** and **Second Party** are acting under this MOU as independent contractors, and the relationship established under this MOU shall not be construed as a partnership. Neither Party is authorized to use the other Party's name in any way, to make any representations or create any obligation or liability, expressed or implied, on behalf of the other Party, without the prior written consent of the other Party. Neither Party shall have, nor represent itself as having, any authority under the terms of this MOU to make agreements of any kind in the name of or binding upon the other Party, to pledge the other Party's credit, or to extend credit on behalf of the other Party.

First Party

Second Party

Any divergence or difference derived from the interpretation or application of the MoU shall be resolved by arbitration between the parties as per the Arbitration Act, 1996. The place of the arbitration shall be at District Head Quarters of the First Party. This undertaking is to be construed in accordance with Indian Law with exclusive jurisdiction in the Courts of Bangalore.

IN WITNESS WHEREOF PARTIES HERE TO HAVE ENTERED INTO THIS AGREEMENT EFFECTIVE AS ON THE DATE AND YEAR FIRST WRITTEN ABOVE.

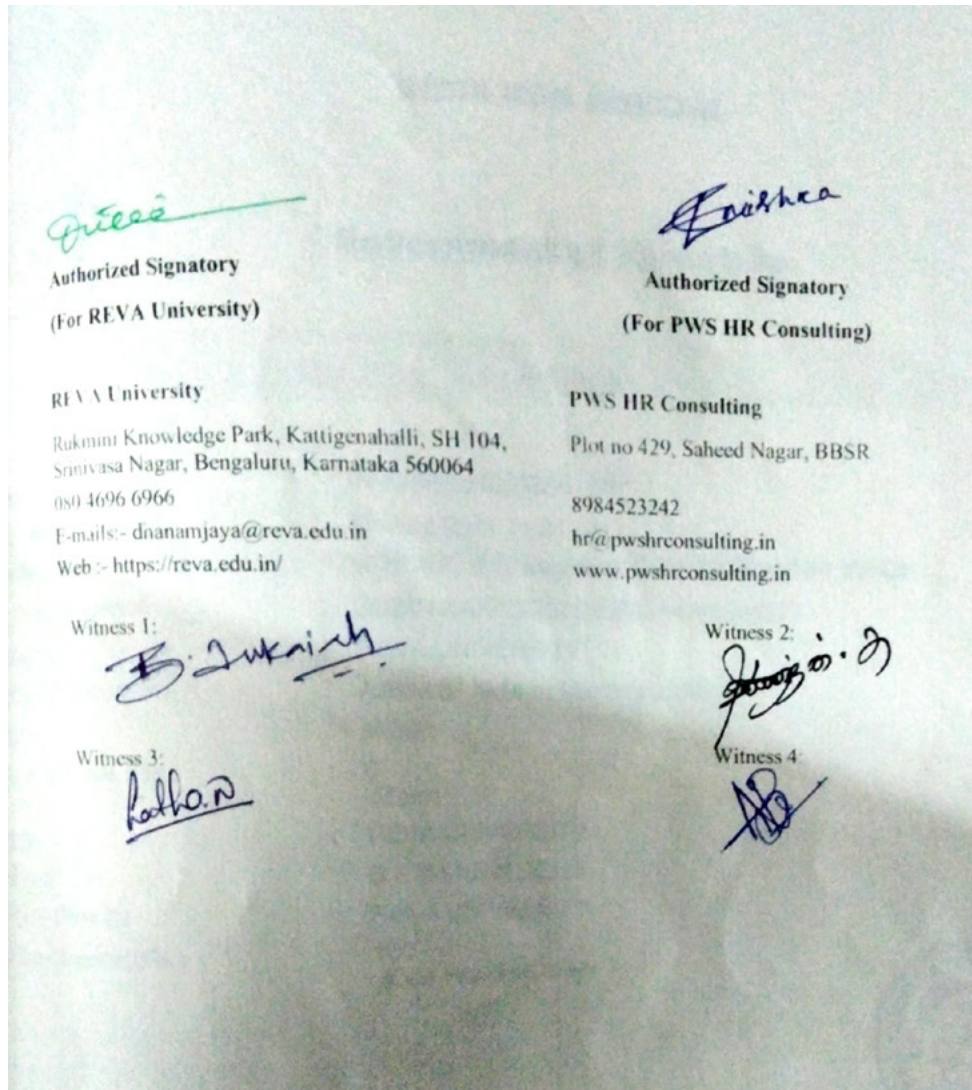
AGREED:

Signature

Signature

Signature
Registrar

REVA University
Bengaluru - 560 064





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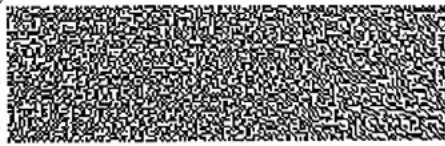
Government of Karnataka

Rs 50

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Description of Document : Article 37 Note or Memorandum
Description : M O U
Consideration Price (Rs.) : 0
(Zero)
First Party : DR VIDYA KUMARI S
Second Party : SRIVATSA SHANDILYA
Stamp Duty Paid By : DR VIDYA KUMARI S
Stamp Duty Amount(Rs.) : 50
(Fifty only)

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REVA University
Bengaluru - 560 064

Memorandum of Understanding
Between
INTERNATIONAL ARTS AND CULTURAL FOUNDATION
And

**REVA UNIVERSITY, SCHOOL OF PERFORMING ARTS AND INDIC
STUDIES, BENGALURU, KARNATAKA, INDIA**

This agreement is made this 1st day of December, 2021 between REVA University, Bengaluru, a public institution of higher education located at Rukmini Knowledge Park, Kattigenahalli, Yelahanka, Bengaluru, Karnataka 560064 (REVA University, Bengaluru) and International Arts and Cultural Foundation here referred as (“**First Party**”) located at 1306, 7th main, 12th cross, West of Chord road, 2nd stage, Mahalakshimpuram Bengaluru -560086 .

In mutual interest in cooperation, REVA University, Bengaluru & the first party enter into this Memorandum of Understanding (MoU) to promote joint educational and technical collaboration and agree as follows:

ARTICLE 1: SCOPE OF COLLABORATION

Clause 1.1 Areas of collaboration may be proposed by either institution and may include, but are not limited to:

- Joint teaching, research, or cultural activity;
- Sharing or creation of educational materials and resources.

Clause 1.2 Any specific activity developed under this MOU shall be detailed in a subsequent agreement, signed by each institution’s authorized signatory, which will describe the scope of the proposed activity, intended outcomes, budget, and responsible departments or individuals.

Clause 1.3 All activities shall be subjected to the approval of each institution's authorized representatives.

Clause 1.4 Both parties shall take all reasonable steps to ensure the successful completion of the collaboration and co-operate with each other in duly carrying out the obligation agreed upon.

Clause 1.5 The First Party will provide necessary expertise whenever required. The expertise includes support with its practical implementations, methods and training.

Clause 1.6 The First Party will provide training, wherever required, and the extent of such training will be entirely up to the discretion of the First Party.

Clause 1.7 Expertise provided by Reva University will include performing artists (musicians) or students wherever required.

Clause 1.8 All obligations and liabilities of both the parties are limited by points of reference mentioned in this agreement.

Clause 1.9 Either of the parties are not liable to exchange or share any financial assistance received by the government or non-government bodies and other revenues received by either parties or

any revenue earned through programs or other means of resources

Clause 1.10 Before using the logo or affiliation for any programs or sanctions/permissions which would benefit either parties a written consent to be taken by both the parties

ARTICLE 2: DURATION AND EVALUATION

Clause 2.1 This MOU shall be in effect for a period of 01 years from the last date of signature. Either party may request termination of this agreement, in writing, thirty (30) days prior to the proposed termination date. Any activities in progress at the time of termination shall be permitted to conclude as planned unless otherwise agreed in writing.

Clause 2.2 A joint evaluation of the MOU will be initiated by the designated representatives 1 month (30 days) prior to the expiration date if both parties agree. Following the evaluation, the MOU may be renewed and resigned for an additional period.

Clause 2.3 Amendments to this MOU may be requested, in writing, by either party and approved by the authorized signatories.

ARTICLE 3: NON-DISCRIMINATION

The parties agree not to discriminate on the basis of religion, race, creed, national or ethnic origin, sex, age, handicap, political affiliation, sexual orientation, disability or status as a veteran.

ARTICLE 4: COMPLIANCE WITH LAW

The parties specifically intend to comply with all applicable laws, rules and regulations as they may be amended from time to time. If any part of this Agreement is determined to violate federal, state, or local laws, rules, or regulations, the parties agree to negotiate in good faith revisions to any such provisions. If the parties fail to agree within a reasonable time to revisions required to bring the entire Agreement into compliance, either party may terminate this Agreement upon thirty (30) days prior written notice to the other party.

ARTICLE 5: FERPA

The parties acknowledge that information (if any) received from REVA University, Bengaluru regarding students may be protected by the Family Educational Rights and Privacy Act ("FERPA"), and agrees to use such information only for the purpose for which it was disclosed

and not to make it available to any third party without first obtaining the Student's written consent from first party. For the purposes of this Agreement, Home Institution shall be deemed to be a "university official."

ARTICLE 6: USE OF NAME

Both the parties shall use the name, logo, likeness, trademarks, image or other intellectual property of either of the other parties for any advertising, marketing, endorsement or any other purposes with the specific prior written consent of an authorized representative of the other party as to each such use. Home Institution may refer to the affiliation with REVA University, Bengaluru in public information materials regarding the relevant Program. REVA University, Bengaluru reserves the right to review and request modification of Home Institution's reference to REVA University, Bengaluru as necessary. Home Institution may refer to the affiliation with REVA University, Bengaluru in its brochures and other public information materials having to do with the Program.

ARTICLE 8: INDEPENDENT CONTRACTORS

Each party is separate and independent and this Agreement shall not be deemed to create a relationship of agency, employment, or partnership between or among them. Each party understands and agrees that this Agreement establishes an independent contractor relationship and that the agents or employees of each respective party are not employees or agents of any other party.

ARTICLE 9: SEVERABILITY

The provisions of this Agreement are severable, and if any provision of this Agreement is found to be invalid, void or unenforceable, the remaining provisions will remain in full force and effect.

ARTICLE 10: WAIVER

The waiver of any breach of any term of this Agreement does not waive any subsequent breach of that or another term of this Agreement.

ARTICLE 11: ASSIGNMENT

No party may assign this Agreement or any rights or obligations under this Agreement to any person or entity without the prior written consent of the other parties. Any assignment in violation of this provision is null and void.

ARTICLE 12: GOVERNING LAW

This Agreement shall be construed and enforced solely pursuant to the laws of the Karnataka State (India), without giving effect to the principles of conflicts of laws thereof and the parties agree that this Agreement shall be subject to the sole and exclusive jurisdiction of the Karnataka State. The Parties agree that the foregoing governing law, jurisdiction and forum selections have been concluded as a result of arms-length negotiations and are not overly onerous or burdensome to either Party.

ARTICLE 13: ENTIRE AGREEMENT

This Agreement constitutes the entire agreement and understanding between the parties as to the subject matter hereof and supersedes all prior discussions, agreements and undertakings of every kind and nature between them, whether written or oral, with respect to such subject matter. This Agreement may subsequently be modified only by a written document executed by both parties. If the first party does not abide by the norms of this MOU, REVA University has the right to hold it against law under its jurisdiction.

ARTICLE 14: NOTICES

Any consent, waiver, notice, demand, request or other instrument required or permitted to be given under this Agreement or any related agreements shall be in writing and shall be delivered by hand or sent prepaid telex, cable or facsimile transmission, or sent, postage prepaid, by registered, certified or express mail or reputable overnight courier service and shall be deemed given when so delivered by hand, telexed, cabled or transmitted, or if mailed, five (5) days after the notice is delivered to the courier service, addressed to the addresses set forth herein, or to such other address as may later be specified in writing by either party.



REVA
UNIVERSITY

Bengaluru, India

Signature

REVA University, Bangalore

[Handwritten Signature]
11/12/2021

Authorized Signatory

For: REVA University, Bangalore

Dr. Vidya Kumari S
Professor and Director
School of Performing Arts and Indie
Studies
REVA University
Rukmini Knowledge Park,
Kattigenahalli, Yelahanka, Bengaluru,
Karnataka 560064

Director
School of Performing Arts
REVA University
Rukmini Knowledge Park, Kattigenahalli
Yelahanka Bengaluru - 560 064



Signature

International Arts and Cultural
Foundation

[Handwritten Signature]
11/12/2021

Authorized Signatory

For: Partnering Institution

Mr. Srivastva Shandilya
Director, International Arts and
Cultural Foundation, Bengaluru,
Karnataka

[Handwritten Signature]
Registrar

REVA University
Bengaluru - 560 064



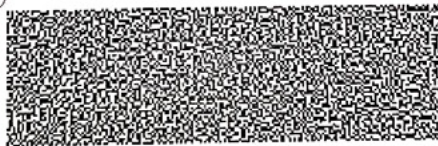
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Description of Document : Article 37 Note or Memorandum
Description : M O U
Consideration Price (Rs.) : 0
(Zero)
First Party : PREVENTIA VENTURES PVT LTD
Second Party : REVA UNIVERSITY BENGALURU
Stamp Duty Paid By : PREVENTIA VENTURES PVT LTD
Stamp Duty Amount(Rs.) : 50
(Fifty only)



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Memorandum of Understanding
Between
PREVENTIA VENTURES PVT. LTD
And
REVA UNIVERSITY, BENGALURU

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2. The onus of checking the legitimacy is on the users of the certificate.
3. In case of any discrepancy please inform the Competent Authority.

This agreement is made this 29th day of November between REVA University, Bengaluru, a public institution of higher education located at Rukmini Knowledge Park, Kattigenahalli, Yelahanka, Bengaluru, Karnataka 560064 (REVA University, Bengaluru) and Preventia Ventures Pvt. Ltd here referred as (“First Party”)located at Preventia House, 4th Cross, Nakshatra Layout, HennurBagalur Main Road, Kothanur, Bangalore 560077, India.

In the spirit of friendship and with mutual interest in cooperation, REVA University, Bengaluru &the first party enter into this Memorandum of Understanding (MoU) to promote joint educational and technical collaboration and agree as follows:

ARTICLE 1: SCOPE OF COLLABORATION

Clause 1.1 Areas of collaboration may be proposed by either institution and may include, but are not limited to:

- Joint teaching, research, or cultural activity;
- Sharing or creation of educational materials and resources.

Clause1.2 Any specific activity developed under this MOU shall be detailed in a subsequent agreement, signed by each institution’s authorized signatory, which will describe the scope of the proposed activity, intended outcomes, budget, and responsible departments or individuals.

Clause1.3 All activities shall be subjected to the availability of funds and the approval of each institution’s authorized representatives.

Clause 1.4 This MoU is for collaboration between the two parties in the area of the above research and publication of the results of this research in Journals, magazines or other such media as might be required by giving due credit to both parties.

Clause 1.5 Both parties shall take all reasonable steps to ensure the successful completion of the collaboration and co-operate with each other in duly carrying out the obligation agreed upon.

Clause 1.6 Both parties will have rights to reproduce the results in their websites or other materials or use it for references in any future projects or research.

Clause 1.7 The First Party will provide necessary expertise required for the research project. The expertise includes philosophical support with its practical implementations, methods and training.

Clause 1.8 The First Party will provide training, wherever required, and the extent of such training will be entirely up to the discretion of the First Party.

Clause 1.9 Reva University will provide the required space and other logistics connected with the research in consultation with the director at that period a decision will be taken on the same.

Clause 1.10 Expertise provided by the Reva University will include performing artists (musicians) wherever required, library facilities and references, academic faculty support etc wherever required.

Clause 1.11 All obligations and liabilities of both the parties are limited by points of reference mentioned in this agreement.

Clause 1.12 In the event any of the activities later develop into commercial activity, an addendum will be added at the appropriate time.

ARTICLE 2: DURATION AND EVALUATION

Clause 2.1 This MOU shall be in effect for a period of 01 years from the last date of signature. Either party may request termination of this agreement, in writing, thirty (30) days prior to the proposed termination date. Any activities in progress at the time of termination shall be permitted to conclude as planned unless otherwise agreed in writing.

Clause 2.2 A joint evaluation of the MOU will be initiated by the designated representatives 1 month (30 days) prior to the expiration date if both parties agree. Following the evaluation, the MOU may be renewed and resigned for an additional period.

Clause 2.3 Amendments to this MOU may be requested, in writing, by either party and approved by the authorized signatories.

ARTICLE 3: NON-DISCRIMINATION

The parties agree not to discriminate on the basis of religion, race, creed, national or ethnic origin, sex, age, handicap, political affiliation, sexual orientation, disability or status as a veteran.

ARTICLE 4: COMPLIANCE WITH LAW

The parties specifically intend to comply with all applicable laws, rules and regulations as they may be amended from time to time. If any part of this agreement is determined to violate federal, state, or local laws, rules, or regulations, the parties agree to negotiate in good faith revisions to any such provisions. If the parties fail to agree within a reasonable time to revisions required to bring the entire Agreement into compliance, either party may terminate this Agreement upon thirty (30) days prior written notice to the other party.

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The parties acknowledge that information (if any) received from REVA University, Bengaluru regarding students may be protected by the Family Educational Rights and Privacy Act (“FERPA”), and agrees to use such information only for the purpose for which it was disclosed and not to make it available to any third party without first obtaining the Student's written consent from first party. For the purposes of this Agreement, Home Institution shall be deemed to be a “university official.”

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ARTICLE 8: INDEPENDENT CONTRACTORS

Each party is separate and independent and this Agreement shall not be deemed to create a relationship of agency, employment, or partnership between or among them. Each party understands and agrees that this Agreement establishes an independent contractor relationship and that the agents or employees of each respective party are not employees or agents of any other party.

ARTICLE 9: SEVERABILITY

The provisions of this Agreement are severable, and if any provision of this Agreement is found to be invalid, void or unenforceable, the remaining provisions will remain in full force and effect.

ARTICLE 10: WAIVER

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This Agreement constitutes the entire agreement and understanding between the parties as to the subject matter hereof and supersedes all prior discussions, agreements and undertakings of every kind and nature between them, whether written or oral, with respect to such subject matter. This Agreement may subsequently be modified only by a written document executed by both parties.

If the first party does not abide by the norms of this MOU, REVA University has the right to hold it against law under its jurisdiction.

ARTICLE 14: NOTICES

Any consent, waiver, notice, demand, request or other instrument required or permitted to be given under this Agreement or any related agreements shall be in writing and shall be delivered by hand or sent prepaid telex, cable or facsimile transmission, or sent, postage prepaid, by registered, certified or express mail or reputable overnight courier service and shall be deemed given when so delivered by hand, telexed, cabled or transmitted, or if mailed, five (5) days after


Registrar
REVA University
Bengaluru - 560 064

the notice is delivered to the courier service, addressed to the addresses set forth herein, or to such other address as may later be specified in writing by either party.

Signature

REVA University, Bangalore



Authorized Signatory

For: REVA University, Bangalore

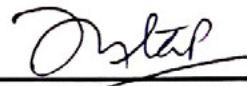
Dr. Vidya Kumari S
Professor and Director
School of Performing Arts and Indic
Studies
REVA University
Rukmini Knowledge Park,
Kattigenahalli, Yelahanka,
Bengaluru, Karnataka 560064

Director
School of Performing Arts
REVA University
Rukmini Knowledge Park, Kattigenahalli
Yelahanka Bengaluru - 560 064



Signature

Preventia Ventures Pvt. Ltd



Authorized Signatory

For: Partnering Institution

Mr. Pratap T R
Chief Coordinator
Preventia House, 4th Cross,
Nakshatra Layout, HennurBagalur
Main Road, Kothanur, Bangalore
560077, India.

PREVENTIA GROUP OF TRUST
The place of Preventia House
No. 60, Nakshatra Layout,
Kothanur Village & Post
Hennur Main Road, Bangalore - 77

PREVENTIA GROUP OF TRUST
The place of Preventia House
No. 60, Nakshatra Layout,
Kothanur Village & Post
Hennur Main Road, B'lore - 77



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REVA University
Bengaluru - 560 064



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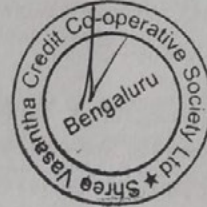
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Description : M O U
Consideration Price (Rs.) : 0
(Zero)
First Party : CAVALIER TRAINING AND CONSULTING PVT LTD
Second Party : REVA UNIVERSITY
Stamp Duty Paid By : REVA UNIVERSITY
Stamp Duty Amount(Rs.) : 100
(One Hundred only)

सत्यमेव जयते



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MEMORANDUM OF UNDERSTANDING

This Memorandum of Understanding (the "MOU") is entered into 26th August, 2021, by and between Cavalier Training & Consulting Pvt Ltd., Cavalier Tower, Dr. Bendre Layout, Gubbi Cross, Kothannur PO, Bengaluru - 560 077 (The first party) and REVA University, Rukmini Knowledge Park, Kattigenahalli, Yelahanka, Bengaluru - 560 064. (The second party).



1

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Registrar
REVA University
Bengaluru - 560 064

The first party is a training company basically preparing students to compete in the UPSC exam and prepare them to face the SSB (Service Selection Board Interviews) to become a commissioned Officer in the defense forces. The first party has over 25 years of experience in this domain and are experts for same.

The second party is a University having significant number of students of which good number of them would be eligible to write the UPSC exam also would face the SSB Interviews. Through the UPSC written also through direct entry they would be facing SSB interviews resulting in to become commissioned officers in the Army, Navy, Airforce and Para Military Forces.

Now for the benefits of students both the parties join hands and decided to impart training to REVA University students well in advance while they are in the college and enable these students to become officers immediately after graduation. This will bring lots of pride and reputation to the REVA University also changes the lives of students due to the early preparation of students while in the university by the first party.

The first party will give 25% discount on fees to each student of REVA University under this MOU. The fee structure will be taken as prevailing time to time per course being conducted by the first party.

These courses basically for the UPSC written exam if adequate number of students are available the team of first party would conduct at the premises of REVA University or at the premises of the first party or students can come to classes under their own arrangements.

Classes for UPSC can be conducted during weekends and holidays or any time the 2nd party allocate keeping in view of the existing academic ongoing programme.

1. SSB Training

Eligible students will be prepared to face the SSB well in advance and these classes will be conducted at the premises of the first party since it involves outdoor training etc.. also, it is necessary that Reva University students interacts with the students of Cavalier India to have a better understanding of their inter personnel/ Group performance.

Transportation students should make their own arrangements.

REVA University should provide adequate campus facilities to display various training/ career related information and posters for the awareness of students.

2. Selection

Eligible Candidates will be selected by the team of 1st Party.

3. Payment

For UPSC exam 50% of discounted fees to be paid at the time of enrolment. Balance 50% after 1 month of training. For SSB 100% discounted fees to be paid to the 1st Party at the time of enrolment by students willing to attend the training program. There shall be no refunds of fees for both UPSC and SSB Preparations.

4. Risk Factor

The SSB training involves obstacle training activities any injuries/ damages happens during course of training the 1st Party will not be held responsible in any manner.

5. General

This is a unique Scheme for the Career of Students there are lots of scope to improve as and when the programme kick start. Various can be added to the MOU as per mutual understanding.

It is expected that since it involves significant number of students the first party would require to scale up its infrastructure / staffs/ study material etc therefore longevity of the MOU is essential. Therefore, the validity of this MOU is for a period of 4 years and renew up on mutual understanding. The first 4 years will be considered lock in period.


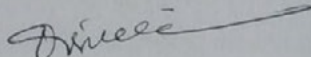
The first party is specialized in the activities mentioned above and they are bringing their 25 years of experience to the 2nd party Campus, under no circumstances the 2nd party would copy the same or directly approach the first parties' instructors/ staff etc.

To plagiarize / copy the same and bypass the first party and conduct the same by avoiding the first party. This would be considered the breach of contract and Trust and the first party has the right to approach the counts in Bengaluru and claims for damages etc.

This is a unique programme which would bring lots of pride & prestige for both the parties and change the lives of REVA University students. A first of its kind combined education programme. Leading to a Class I Gazetted Officer Career for students at early ages of their life i.e., immediately upon graduation.

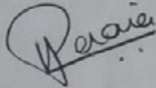


Parties have agreed the above in all respects and affix the signature as under

<p>On behalf of Cavalier Training & Consulting Pvt. Ltd. Signed by</p>	<p>On behalf of REVA University Signed by</p>
	
<p>Major Ravindran Managing Director Cavalier Training & Consulting Pvt Ltd. Bengaluru.</p>	<p>Dr. M. Dhanamjaya Vice-Chancellor, REVA University. Bengaluru.</p>

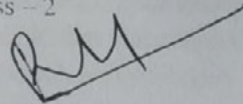


Witness - 1



Mrs. Presteena Pereira
Marketing Head,
Cavalier Training & Consulting Pvt. Ltd.
Bengaluru.

Witness - 2



Dr. Y. Ramainga Reddy
Director,
School of Civil Engg.,
REVA University,
Bengaluru.





INDIA NON JUDICIAL

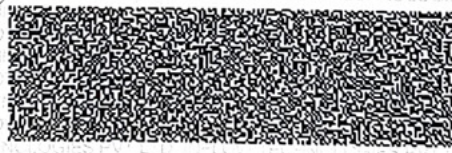
Government of Karnataka

Rs. 100

e-Stamp

Certificate No. : IN-KA23146854144574U
Certificate Issued Date : 31-Jan-2022 12:06 PM
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Unique Doc. Reference : SUBIN-KAKAKSCSA0886956980665206U
Purchased by : INFLOW TECHNOLOGIES PVT LTD
Description of Document : Article 37 Note or Memorandum
Description : MEMORANDUM OF UNDERSTANDING
Consideration Price (Rs.) : 0
 (Zero)
First Party : INFLOW TECHNOLOGIES PVT LTD
Second Party : REVA UNIVERSITY
Stamp Duty Paid By : INFLOW TECHNOLOGIES PVT LTD
Stamp Duty Amount(Rs.) : 100
 (One Hundred only)

सत्यमेव जयते



Please write or type below this line

Memorandum of Understanding

1. This Memorandum of Understanding is being executed on 2nd February 2022 between Inflow Technologies Pvt Ltd having its registered office at Inflow House, #33 & 34, Indiranagar 1st Stage, Off 100 Feet Road, Bangalore – 560038 and represented by Mr. Rameshwar Jaju (Financial Controller) hence for purpose of MOU known as 'Delivery and Consultancy Partner' and School of 090, REVA University represented by Dr. Ashwin M (Deputy Director & Professor), hence for purpose of MOU known as 'Resource Partner'.

Statutory Alert:

1. The authenticity of this Stamp certificate should be verified at www.shrestamp.com or using the Stamp Mobile App of Stock Holding Corporation of India.
2. Any discrepancy in the details on this certificate and as available on the website / Mobile App renders it invalid.
3. The onus of checking the legitimacy is on the users of the certificate.
3. In case of any discrepancy please inform the Corporation.

(Signature)
Director
School of Computer Science and Engineering
Karnataka Knowledge Park, Kattankulur



(Signature)
Registrar
REVA University
Bengaluru - 560 064

2. Delivery Partner would be offering International Certifications to the interested students from different vendors @ academic discounted price and those students who voluntarily pay the exam fees would be getting bundled training free of cost mapped to the certifications. Consultancy work in terms of APP development and establishing labs for research in IOT will be provided.
3. This contract in no way creates any financial binding nor does it imply that 'resource partner' has committed to provide any fixed number of student's registrations per year for the certification exams/bundled workshops, the only commitment from their end is to provide platform to address students / seminar to educate and motivate them about the various certifications and subsequent permission for registering the students **voluntarily interested** for the same.
4. Delivery Partner would bundle a '**free of charge**' faculty development Program once a year for the faculty members of the **resource partner as per Inflow Technologies Pvt. Ltd. Training calendar.**
5. Delivery Partner would also **sponsor certification vouchers for faculty members** equivalent to 10% of the total students enrolled in academic year.
6. **Students would be registering directly for the certification exam by making payment in Reva University to the SPOC (Single Point of Contact) appointed by the Resource partner via online mode or offline by cash/chq/DD.**
7. **Incase if only the resource partner collects the payments, Resource Partner would transfer full payment in advance within 7 days of collecting the same to Delivery Partner, as certification exam vouchers can only be booked once payment is made.**
8. Students would be receiving a confirmation mail of their certification voucher being booked and entitlement to bundled training/workshop, once they/Delivery partner register either online or offline.
9. The fee charged is against Microsoft /other vendor Certification exam and all other services like training are complimentary / bundled and cannot be linked anywhere with the release of payment to **delivery partner** (incase if the certification fees is collected by **resource partner**).
10. Student would be receiving their **transcript and certificates** for the exam directly in their account in e-format, from the specific vendor like Microsoft /Certiport etc. post successfully clearing the exam.



Director
School of Computer Science and Engineering
REVA University
Rukmini Knowledge Park, Kattigenahalli,
Yelahanka, Bengaluru-560 064




Registrar
REVA University
Bengaluru - 560 064

11. As per the discussion with concerned stakeholders of the department and as agreed by both parties involved in the MoU, 'Delivery Partner' would provide 'Resource Utilization Fees' (RUF) against use of infrastructure and other resources for the bundled program. The Resource Utilization fees will be paid as per the slabs given below:

Sr. No	Number of students enrolled for program	RUF percentage
1	Till 100 Enrolments	15%
2	101 to 200 Enrolments	20%
3	More than 201 Enrolments	25%

12. Resource Partner would provide necessary infrastructure within college like labs with Computers, LCD Projector's, internet etc. for the execution of the **bundled training** and conducting the **Certification Exam as per mutually agreed terms.**
13. Resource partner would allocate time slot either on weekends/holidays /regular slot a full day for min 6-8hrs or as per mutual consent with delivery partner for execution of bundled training in their campus.
14. The duration of the training may increase as per the level of participants and shall not be linked with the release of payments.
15. The tenure of the contract would be for a period of one year i.e. from **2nd February 2022 to 1st February 2023.**
16. Prices of the certification are subject to review and revision as per the policy of the Certification vendor and other state and Government taxes and when applicable by the Government of India and any increase in logistics the same would be accommodated.
17. "**Resource Partner**" cannot hire or take services from any current full time /part time, ex- employee of the Delivery Partner either directly or indirectly for any full time or part time assignment for minimum period of one year from the date of expiry of contract.
18. "**Resource Partner**" must follow from time to time rules/regulation & operational protocols laid down by Microsoft/Certiport other international vendors for their respective certification.



Director

School of Computer Science and Engineering
REVA University

Rukmini Knowledge Park, Kattigenahalli.

Mobile Number: 98456 78901




Registrar
REVA University
Bengaluru - 560 064

19. In case of any dispute, or difference whatsoever arising between the parties out of or relating to the construction, meaning, scope, operation or effect of this contract or the validity or the breach there of shall be settled by arbitration in accordance with the rules of arbitration of the Indian Council of Arbitration and the award made in pursuance there of shall be binding on the parties, however the court of jurisdiction would be Bengaluru.
20. The clause is intended to be legally binding and the parties agree and acknowledge that both the terms of MOU and the discussion relating to the collaborative activity are confidential and neither party will disclose them without the prior written consent of the other party.
21. **Resource Partner** would issue a letter of completion upon successful completion of the certification and bundled training program.
22. Minimum batch size to run a bundled training/workshop bundled with Certification will be 40-50 students. However, in case the numbers are different, than the decision on the same would be as per mutual consent.
23. **Cost of certification Exam** bundled with bundled workshop:

Certification mapped bundled Workshop	Certification Exam Cost with one Attempt	Program Duration
AI & ML mapped with AI-900 Microsoft Azure AI fundamentals	3440 + 18% GST	40-45 hours
Data Science & Analytics mapped with DP-900, Microsoft Azure data fundamentals.	3440 + 18% GST	40-45 hours
Cloud computing with Azure mapped with AZ-900. Microsoft Azure data fundamentals.	3440 + 18% GST	40-45 hours
Java & SQL mapped with MTA 98-388, Introduction to programming using java	3440 + 18% GST	40-45 hours



Director
School of Computer Science and Engineering
REVA University
Rukmini Knowledge Park, Kattigenahalli
Kalyanaka, Bengaluru - 560 064


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REVA University
Bengaluru - 560 064

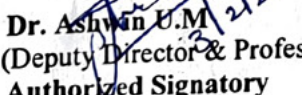
24. The College share RUF will be transferred as consultancy development work for the school which would help the staff and students in developing Application software's required for the society. Payment is collected by Inflow Technologies Pvt Ltd. All the financial transactions will be done through REVA University account with the approval of accounts dept. REVA University.

For

Accounts Department
REVA University

For

School of Computer Science and Engineering,
Reva University,


Dr. Ashwin U.M.
(Deputy Director & Professor)
Authorized Signatory
Date: 31/2/22

Director
School of Computer Science and Engineering
REVA University
Rukmini Knowledge Park, Kattigenahalli
Yelahanka, Bengaluru-560 064

For

Inflow Technologies Pvt Ltd


Mr. Rameshwar Jaju
(Financial Controller)
Authorized Signatory
Date: 02-Feb-2022




Registrar
REVA University
Bengaluru - 560 064



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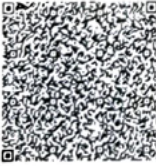
INDIA NON JUDICIAL

Government of Karnataka

e-Stamp

Certificate No. : IN-KA10179259896861T
Certificate Issued Date : 22-Sep-2021 10:50 AM
Account Reference : NONACC (FI)/ kacrsf08/ GUNDLUPET/ KA-CJ
Unique Doc. Reference : SUBIN-KAKACRSFL0877441692631915T
Purchased by : CYNEFIAN PRIVATE LIMITED
Description of Document : Article 12 Bond
Description : MEMORANDUM OF UNDERSTANDING
Consideration Price (Rs.) : 0
(Zero)
First Party : CYNEFIAN PRIVATE LIMITED
Second Party : REVA UNIVERSITY BANGALORE
Stamp Duty Paid By : CYNEFIAN PRIVATE LIMITED
Stamp Duty Amount(Rs.) : 100
(One Hundred only)

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Registrar
REVA University
Bengaluru - 560 064

MEMORANDUM OF UNDERSTANDING

BETWEEN
Cynefian Pvt. Ltd.
AND
Reva University Bangalore

This MOU is made and executed on today the 23 day of 09 month, two thousand twenty one

BETWEEN

CYNEFIAN PVT LTD, having their place of business at 1010/27 Mysore Road, Gundlupet – 571111 (Herein after referred to as INDUSTRY PARTNER) Represented by its authorized representative Sri Sreenidhi G S D

AND

REVA UNIVERSITY, at Rukmini Knowledge Park, Kattigenahalli, Yelahanka, Bengaluru, Karnataka 560064.
(Herein after referred to as HOST INSTITUTION) Represented by its authorized representative Dr. Ashwinkumar U M

1. **Purpose** - The purpose of this MOU is to establish the terms and conditions under which INDUSTRY PARTNER and HOST INSTITUTION will operate to deliver the “**Professional Cloud and DevOps Training and Certification Program**” as per the attached curriculum document.


Professional DevOps
and Cloud Training P:

The commercials of the programs will be as per the attached document below


COURSE FEE.pdf

2. This MOU may be terminated, with specifying the reason, by either party upon one month after serving the written notice, which notice shall be delivered by


Registrar
REVA University
Bengaluru - 560 064

hand or by certified mail or by email to the address listed above, subject to the condition that the interest of the participants of the course should not suffer under any circumstances.

3. **Terms of Payment** – The total payment for the course is Rs.5000.00 per semester per student to be paid to the Industry Partner by the University through Account as per the payment schedule provided below:

Table of payment to be provided

5. **Responsibilities of Industry Partner**

- Creation of Course material to be delivered.
- Provide Certificate to each student who completes the course with **90% or above** attendance and passes **minimum 3 out of 4 modules exams**.
- Set up virtually accessible lab on infrastructure provided by the Industry Partner.
- Deliver Course lecture, help students to do hands on - Lab sessions as part of the Certification Program.
- Conduct Exams/Test/quizzes and provide results thereof.
- Clear doubts raised by students during course delivery time.
- Provide support to students for **1 hour every day collectively** till 30 days after the end of the course.

6. **Responsibilities of Institutions**

- Sales and promotion are the responsibilities of the Host Institution
- Socialize and market the course among students
- Conduct Student registration for the batch
- Collect fees and transfer fees money to Industry Partner as per the fee agreement attached.
- Provide servers and lecture delivery platform to Industry Partner to conduct the Certification Course.

7. **General Provisions**

A. **Amendments** - Either party may request changes to this MOU. Any changes, modifications, revisions or amendments to this MOU which are mutually agreed upon by and between the parties to this MOU shall be incorporated by written instrument and effective from the date of said amendment and signed by both parties to this MOU.


B. Applicable Law. The enforcement of the terms and conditions of this MOU in case of any dispute shall be subject to the jurisdiction of the Bangalore courts.

C. Entirety of Agreement - This MOU, consisting of 3, Three, pages, represents the entire and integrated agreement between the parties for this particular course and supersedes all prior negotiations, representations and agreements, whether written or oral.


D. There are no Third Party Beneficiary Rights as per this Memorandum of Agreement.

IN WITNESS WHEREOF THE INDUSTRY PARTNER AND THE HOST INSTITUTION THROUGH THEIR AUTHORIZED REPRESENTATIVES HAVE SET THEIR HANDS TO THIS MOU ON THE DAY, MONTH AND YEAR ABOVE MENTIONED IN THE PRESENCE OF THE FOLLOWING WITNESSES -

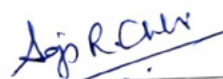
For [CYNEFIAN PVT. LTD.]



Sreemadh GSD
Director and CEO
Cynefian Pvt. Ltd.
Date 23/09/2021

Witnesses

1. 
C SATHISH

[Reva University]


Dr. Sanjay Chitnis
Dean
School of CSE
Date 23/09/21


Dr. Ashwin Kumar UM
Deputy Director
School of CSE
Date 23/09/21

CYNEFIAN

COURSE FEE, MATERIALS, AND INFRASTRUCTURE

1. The fee per student will be Rs 5000 per semester for the Industry Partner (Infrastructure, Materials, + GST)
2. All materials will be provided by the industry partner (Cynefian Pvt. Ltd.)
3. The Cloud and hosting infrastructure will be provided by the Industry Partner (Cynefian Pvt. Ltd.)
4. Either the student or the university will be responsible for providing infrastructure to attend the sessions (Laptop or PC)
5. The program will be completely online (virtual mode), both lecture and lab
6. All instructors will be from the Industry Partner (Cynefian Pvt. Ltd.)
7. All materials will be provided by the Industry Partner (Cynefian Pvt. Ltd.)
8. Once students register and pay the fees, they will get the learning materials.
9. The payment to the Industry Partner will be made by the University and will be made as soon as the student pays the fees. We will share the account number for the same.
10. There will be module level exit tests for each module.
11. On successfully clearing above 90% for 3 out of the 4 modules, each student will be entitled to receive a Professional DevOps and Cloud Practitioner Certificate which will be signed by our CEO.
12. Optionally, Cynefian Pvt. Ltd. will assist the students to register for and complete globally recognized certificates for respective technologies (DevOps, AWS, GCP, etc..)
13. On successful completion of the course the top student(s), based on performance, will be offered an internship with Cynefian Pvt. Ltd., India Office as an exclusive offer.

Objectives of the Course

The objective of this course is to provide students B.Tech/BCA/MCA/MSc, industry professionals, cyber security enthusiast, faculty who want to learn fundamentals of cyber security etc a broad knowledge base with required hands on lab exercises on relevant topics of cyber security domain.

This is a certification program, and will be delivered by industry professionals and will cover the topics that are relevant to industry requirements.

At the end of this course, participants will have sound fundamentals on cyber security along with the relevant hands on experience which will makeS them industry desired due to skills acquired

Introduction and Basic Concepts

1. Components of Software Architecture
2. Aspects of Software Development
3. Introduction to Networking
4. Design and configuration of Enterprise infrastructure

DevOps

1. Continuous Exploration
2. Continuous Integration
3. Continuous Deployment
4. Continuous Testing
5. Continuous Delivery
6. Continuous Monitoring
7. Continuous Security

Cloud

1. AWS
 - a. AWS Architecture
 - b. AWS Services
 - c. Networking
 - d. Compute
 - e. Storage
 - f. Security
2. GCP Overview
3. Other Cloud platforms

Program Outcomes

1. Train the Student
2. Train the Trainer
3. Certification

Other Information

Instructors:

Course Head: Sreenidhi GSD

Instructors: Provided by Cynefian (India) private ltd. In collaboration with Blinqlabs (USA)

Tools to be Used :

DevOps

Continuous Exploration: Atlassian Confluence, Atlassian Jira or similar, Eclipse / IntelliJ

Continuous Integration: Git, GitHub, GitLab, Jenkins, Atlassian Bamboo

Continuous Deployment: Jenkins, Atlassian Bamboo

Continuous Testing: Java, Selenium, Appium, Cucumber, Cheetah, JUnit, TestNG

Continuous Delivery: Docker, K8s

Continuous Monitoring: Elastic, Log stash, Kibana, Grafana

Continuous Security: SonarQube

Cloud: AWS, AWSCLI, GCP

Notes:

No more than 25 Students in a Batch

2hrs per day /4 Days /week/16week=128 Hours Course

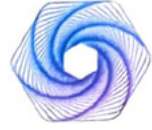
Infrastructure will be provided by **Cynefian**

Teaching platform to be provided by **Reva University**

Materials will be provided by **Cynefian**

Proposed Course Fees:

TBD



Bank Details

Account Name: **Cynefian Pvt. Ltd.**

Account Number: **50200061199521**

Bank: **HDFC Bank**

Branch: **Saraswathipuram Branch, Mysore**

IFSC Code: **HDFC0000065**

Please do let us know in case of any clarifications.

Thanking you.

Yours sincerely,

For **CYNEFIAN PVT.LTD.**


DIRECTOR



सत्यमेव जयते

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Government of Karnataka

Rs. 100

e-Stamp

Certificate No : IN-KA08021595062109T
Certificate Issued Date : 22-Apr-2021 01:57 PM
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Description : M O U
Consideration Price (Rs.) : 0
(Zero)
First Party : REVA UNIVERSITY
Second Party : CRIYAGEN AGRI AND BIOTECH PVT LTD
Stamp Duty Paid By : REVA UNIVERSITY
Stamp Duty Amount (Rs.) : 100
(One Hundred only)
सत्यमेव जयते



Please write or type below this line

MEMORANDUM OF UNDERSTANDING

This Memorandum of Understanding (MoU) is made and executed at Bengaluru on 21st April, 2021 (21.04.2021) between:

Department of Biotechnology, School of Applied Sciences, REVA University, Rukmini Knowledge Park, Kattigenahalli, Bengaluru - 560 064, Karnataka, India.

Page 1 of 5

Statutory Alert:

1. The authenticity of this Stamp certificate should be verified at 'www.shicilestamp.com' or using e-Stamp Mobile App of Stock Holding.
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3. The onus of checking the legitimacy is on the users of the certificate
3. In case of any discrepancy please inform the Competent Authority


Registrar
REVA University
Bengaluru - 560 064

AND

Criyagen Agri & Biotech Pvt. Ltd., Survey # 75/1, 9th KM, Doddaballapur-Nelamangala State Highway - 74 Karim Sonnenahalli – 561 203, **Tq:** Doddaballapur, **Dist:** Bengaluru (R) Karnataka, India.

PRELUDE:

REVA University (hereafter referred to as RU) has been established by the Act of Government of Karnataka as a REVA University Act, 2012 as a Private University and notified Karnataka State Gazettee notification No.80 SAMVYASHAE SHASANA 2012 Bengaluru dated 7th February 2013 and has been recognized by UGC as per section 2(A) of UGC Act. The University imparts education and offers programs and courses leading to Graduate, Post- Graduate, PhD and such other Degrees, Diplomas and Certificated as provided in its objectives and functions. The campus is located at Rukmini Knowledge Park, Kattigenahalli, Yelahanka, Bengaluru – 560 064 has well-furnished infrastructure facilities for academic and research activities. The University always strives to maintain quality and high standards of education and promotes students to develop their overall personality to become good citizens in the country.

Criyagen Agri & Biotech Pvt. Ltd., Survey # 75/1, 9th KM, Doddaballapur-Nelamangala State Highway - 74 Karim Sonnenahalli – 561 203, **Tq:** Doddaballapur, **Dist:** Bengaluru (R) Karnataka, India (hereinafter referred to as “**Second Party**” which term and expression shall mean and include its nominees and permitted assigns), of the **OTHER PART**.

PREAMBLE:

Memorandum of Understanding between **REVA University**, Rukmini Knowledge Park, Kattigenahalli, Bengaluru – 560 064 and **Criyagen Agri & Biotech Pvt. Ltd.**, Sonnenahalli, Doddaballapur – 561 203, represented by its undersigned of the one part and represented by its undersigned of the other part:

RECITAL:

Where, REVA University and Criyagen Agri & Biotech Pvt. Ltd., shall be hereinafter jointly referred to the parties and singularly as party.

The parties have decided to agree to establish academic and research collaborations in the areas of mutual interest and in accordance with terms and conditions set forth in this Memorandum of Understanding (MoU). Both the parties agree on the following activities:

Academics:

1. Exposing students for Agri-Entrepreneur skills with Criyagen infrastructure and business models.
2. Both the parties shall explore the possibilities of offering joint courses in the field of Agricultural Biotechnology/ Life Science domain here after
3. Criyagen Agri & Biotech Pvt. Ltd. shall offer certificate training courses to students of REVA University at company's pilot lab in Bengaluru. The course modules to be offered and logistics would be as mentioned in Annexure A attached. (Minimum Number of students enrolled for module would be 5 and Maximum Number of students would be 15)
4. Criyagen Agri & Biotech Pvt Ltd. shall offer hands on training for students related to the domain of Agricultural Biotechnology/Life Science in the final (academic) year as per the course module.
5. The course structure and schedule will be determined from time to time as agreed by both parties.
6. The course fee for all modules will be handled through REVA University in a pre-determined manner.
7. Criyagen Agri & Biotech Pvt. Ltd. shall allow REVA University students for industrial visit as per the convenience and company policy.
8. Criyagen Agri & Biotech Pvt. Ltd. shall provide faculty development programs to the academic faculty members from REVA University with mutual understanding as per the company policy.
9. Both the parties shall mutually exchange any relevant information on teaching, research, and scientific programs.
10. Criyagen Agri & Biotech Pvt. Ltd. shall offer Academic / Research projects/Internships and training programs relevant to both parties.
11. Both the parties shall jointly organize seminars, conferences, or workshops on topics of mutual interest and to invite each other's Scientists/Faculty and Staff to participate therein.
12. Criyagen Agri & Biotech Pvt. Ltd. shall absorb/ assist students for placement at relevant industries/ organizations.

Research:

1. REVA University and Criyagen Agri & Biotech Pvt. Ltd. shall promote active interaction among their staff and explore possibilities for undertaking commercial or government funded joint research and development projects.
2. Scientists, Research Scholars and PhD candidates of both institutions will be encouraged to apply for sponsored or funded projects keeping in view the interests and philosophies of the respective institutions.
3. Criyagen Agri & Bioiech Pvt. Ltd. shall encourage and allow REVA University faculty members for product development in the field of life sciences with mutual consent.

4. Criyagen Agri & Biotech Pvt. Ltd. shall allow Project students and research scholars of REVA University who wish to pursue a part of their research work to utilize the company's infrastructure for a nominal fee.
5. Both the parties shall get involved in consultancy activities concerned to commercial projects and academic research for a nominal fee determined on case-by-case basis between both parties.

Intellectual Property Right:

1. Any work/products that the parties agree, arise out of or in relation to the research work, joint projects, and course as a result of their joint efforts, shall belong to both the parties.

Whereas, under this MoU signed by RU and Criyagen Agri & Biotech Pvt. Ltd., Bengaluru both the parties agreed to establish principles for collaboration and to develop mutually beneficial academic programs.

DURATION AND TERMINATION OF THE MOU:

This MoU will take effect from the date it is signed by representatives of the parties. It will remain valid for three years and may be continued after suitable review and agreement. If either party is found violating the above-mentioned terms or conditions of the MoU, the other party may terminate the MoU by giving written notice of six months in advance. Once terminated, neither REVA University nor Criyagen Agri & Biotech Pvt. Ltd., will be responsible for any losses, financial or otherwise, which the other party may suffer. In the event of termination of the agreement, the rights and obligations of the parties shall be settled by mutual discussions and consensus. However, obligations and commitments already contracted for and involving both parties be honored and continued by both parties until such commitments are completed.

ARBITRATION

Any disputes that arise between the parties shall be amicable resolved within Bengaluru City limits.

ASSIGNMENT OF THE AGREEMENT

The right and/or liabilities arising to any party to this agreement shall not be assigned except with the written consent of the other party and subject to such terms and conditions as may be mutually agreed upon.

This MoU signed subjects to approval of the respective academic / administrative bodies as attested to this deed on 21.04.2021.

SIGNED BY:



Vice Chancellor
REVA University,
Bengaluru.

Dr. M. Dhanamjaya
Vice Chancellor
REVA University
Rukmini Knowledge Park, Kattigenahalli
Yelahanka, Bengaluru- 560064

Witness:



1) Prof. Shilpa BR
Deputy Director, SCAS
School of Applied Sciences
REVA University, Rukmini Knowledge Park
Kattigenahalli, Yelahanka, Bengaluru - 64

2) Prof. Prashantha CN
Assistant Professor.
Dept. of Biotechnology

SIGNED BY:

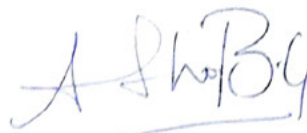


Dr. Basavaraj Girenavar
Chairman and Managing Director
Criyagen Agri & Biotech Pvt. Ltd.,
Bengaluru.

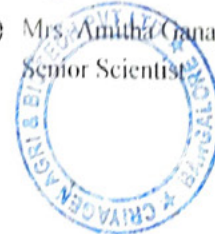


Place: Bengaluru.
Date: 21.04.2021.

Witness:



1) Mrs. Amitha Ganapathy
Senior Scientist





Quotation for engaging the practical classes for the course Agriculture Microbial Technology

From,

Criyagen Agri and Biotech Pvt. Ltd.
Survey no-71/5, Doddaballapur & Nelamangala state
highway no-74, Doddaballapura-Tq
Bangalore Rural- Karnataka-562163.

Quotation No:

Date: 28-01-2021

To,

Head of the Department
Department of Biotechnology,
School of Applied Sciences
REVA University, Bangalore-64

Dear Sir/Madam,

Based on the request from the Department of Biotechnology, School of Applied Sciences, REVA University, Bangalore regarding the quotation of the Agriculture Microbial technology practical experiments with hands on training to students. Hereby, we are providing the best quotation to the student benefit.

Sl. No.	Number of Experiments	Course duration	No. of Students	Cost per experiment per student	GST (@18%)	Cost for 30 experiments per student	Grand total cost for 10 students
---------	-----------------------	-----------------	-----------------	---------------------------------	------------	-------------------------------------	----------------------------------

30 Experiments Courses under taken

1.	Soil Microbiology	One semester (3 rd Sem)	10	600-00	108-00	21,240-00	2,12,400-00
	2. Plant Pathology						
	3. Biomass and Energy systems						

(Dr. Basavaraj Sreenavar)
Signature of the Director



Registrar
REVA University
Bengaluru - 560 064

Practical syllabus for the course Microbial techniques	
Soil Microbiology	
1.	Mother culture preparation and preservation techniques
2.	Isolation and purification of phosphate solubilizing microorganisms in soil.
3.	Mass production of carrier based formulation of <i>Azospirillum brasilense</i> , <i>Pseudomonas fluorescens</i> and <i>Frateuria aurantia</i>
4.	Industrial mass production of liquid formulation of <i>Azospirillum</i>
5.	Developing liquid formulations of bio fertilizers to increase shelf life
6.	Hands on training of operation of industrial fermenters
7.	Concentration of bacterial suspension through centrifugation and spray drying
8.	Quality analysis of bio-fertilizers with respect to FCO standards
9.	Evaluating effect of bio-fertilizers on crop growth in pot study experiment
10.	Bio-fertilizer consortium preparation
Plant pathology	
1.	Mass production of <i>Trichoderma viridae</i> , <i>Paecilomyces lilacinus</i> .
2.	Mass production of Entamopathogenic bio- agents viz, <i>Metarhizium anisopliae</i> , <i>Verticillium lecanii</i> , <i>Beauveria bassiana</i> .
3.	Demonstration of Koch's postulates for a fungal plant pathogens.
4.	Screening for antagonism by dual culture method.
5.	Collection and preservation of disease specimens.
6.	Extraction of Nematodes from soil and plant material.
7.	Transmission of plant viruses and study the virus vector relationship.
8.	Evaluation of different fungicides against the fungal pathogens.
9.	Preparation of Bordeaux mixture. Burgundy mixture and Chaubattia paste and their practical usage in managing the diseases.
10.	Growth observations of different fungal bio agents on different growth media and at different pH regimes.
Biomass and energy system	
1.	Collection and processing of soil, water and plant samples from field
2.	Analyses of sewage water samples
3.	Analyses of irrigation water samples for pH, EC, SO_4^{2-}
4.	Analyses of irrigation water samples for SAR & RSC
5.	Analyses of soil samples for pH, EC, OC and macronutrients
6.	Analyses of soil samples for micronutrients
7.	Analyses of plant samples for macronutrients
8.	Analyses of plant samples for micronutrients
9.	Analyses of organic manures
10.	Soil, Water and Plant analyses reports preparation



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Government of Karnataka

Rs. 100

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Certificate No. : IN-KA08027343182925T
 Certificate Issued Date : 22-Apr-2021 02:00 PM
 Account Reference : NONAGC (FI)/ kacardb08/ DODDABALLAPUR/ KA-BF
 Unique Doc. Reference : SUBIN-KAKACARDB0886065879573194T
 Purchased by : REVA UNIVERSITY
 Description of Document : Article 12 Bond
 Description : M O U
 Consideration Price (Rs.) : 0
 (Zero)
 First Party : REVA UNIVERSITY
 Second Party : BIOZEEN BANGALORE BIOTECH LABS PVT.LTD
 Stamp Duty Paid By : REVA UNIVERSITY
 Stamp Duty Amount (Rs.) : 100
 (One Hundred only)
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MEMORANDUM OF UNDERSTANDING

This Memorandum of Understanding (MoU) is made and executed at Bengaluru on 22nd April, 2021 (22.04.2021) between:

Department of Biotechnology, School of Applied Sciences, REVA University, Rukmini Knowledge Park, Kattigenahalli, Bengaluru - 560 064, Karnataka, India.

Statutory Alert:

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2. Any discrepancy in the details of this Certificate and as available on the website / Mobile App renders it invalid.
3. The onus of checking the legitimacy is on the users of the certificate.
4. In case of any discrepancy please inform the Competent Authority.

Registrar
REVA University
Bengaluru - 560 064

AND

BiOZEEN – Bangalore Biotech Labs Pvt. Ltd., #49/2, Gubbi Cross, Hennur – Bagalur Road, Bengaluru – 560 077, Karnataka, India

PRELUDE:

REVA University (hereafter referred to as RU) has been established by the Act of Government of Karnataka as a REVA University Act, 2012 as a Private University and notified Karnataka State Gazettee notification No.80 SAMVYASHAE SHASANA 2012 Bengaluru dated 7th February 2013 and has been recognized by UGC as per section 2(A) of UGC Act. The University imparts education and offers programs and courses leading to Graduate, Post- graduate, PhD and such other Degrees, Diplomas and Certificated as provided in its objectives and functions. The campus is located at Rukmini Knowledge Park, Kattigenahalli, Yelahanka, Bengaluru – 560 064 has well-furnished infrastructure facilities for academic and research activities. The University always strives to maintain quality and high standards of education and promotes students to develop their overall personality to become good citizens in the country.

BiOZEEN – Bangalore Biotech Labs Pvt. Ltd., #49/2, Gubbi Cross, Hennur – Bagalur Road, Bengaluru – 560 077 (hereinafter referred to as “**BiOZEEN**” which term and expression shall mean and include its nominees and permitted assigns), of the **OTHER PART**.

PREAMBLE:

Memorandum of Understanding between **REVA University**, Rukmini Knowledge Park, Kattigenahalli, Bengaluru – 560 064 and **BiOZEEN** , represented by its undersigned of the one part and represented by its undersigned of the other part:

RECITALS:

Where, REVA University and BiOZEEN – Bangalore Biotech Labs Pvt. Ltd., shall be hereinafter jointly referred to the parties and singularly as party.

The parties have decided to agree to establish academic and research collaborations in the areas of mutual interest and in accordance with terms and conditions set forth in this Memorandum of Understanding (MoU). Both the parties agree on the following activities:

ACADEMICS:

1. Exposing students for Bioprocess Engineering related skills with BIOZEEN infrastructure and business models.
2. Both the parties shall explore the possibilities of offering joint courses in the field of Bioprocess Engineering/ Life Science domain here after.
3. BIOZEEN shall offer certificate training courses to students of REVA University at company's Bio-Pilot laboratory in Bengaluru. The course structure, course schedule, minimum number of participants and course fee for all courses will be determined from time to time as mutually agreed by both parties. Course fee will be borne by either candidates or REVA University and will be handled directly through REVA University.
4. BIOZEEN shall allow REVA University students for industrial visit as per the convenience and company policy.
5. BIOZEEN shall provide faculty development programs to the academic faculty members from REVA University on mutually agreeable subject areas. Training cost for such programs will be borne by the candidate in a pre-determined manner.
6. Both the parties shall mutually exchange any relevant information on teaching, research, and scientific programs.
7. Both the parties shall jointly explore opportunities to organize seminars, conferences, or workshops on topics of mutual interest and to invite each other's Scientists/Faculty and Staff to participate therein.
8. BIOZEEN will assist in placement opportunities for candidates who have undergone the certificate training programs. Profiles of the candidates will be forwarded and recommend to our HR partners across the biotech sector.

RESEARCH:

1. REVA University and BIOZEEN, shall promote active interaction among their staff and explore possibilities for undertaking commercial or government funded joint research and development projects.
2. Scientists, Research Scholars and PhD candidates of both institutions will be encouraged to apply for sponsored or funded projects keeping in view the interests and philosophies of the respective institutions.
3. BIOZEEN shall encourage REVA University faculty members to explore product development opportunities in the field of life sciences with mutual consent.

4. BiOZEEN shall allow Project students, research scholars and faculty members of REVA University who wish to pursue a part of their research work to utilize the company's infrastructure. The work shall be carried out during a mutually agreed time period and associated costs.
5. Both the parties shall get involved in consultancy activities concerned to commercial projects and academic research for a nominal fee determined on case-by-case basis between both parties.

INTELLECTUAL PROPERTY RIGHT:

Any work/products that the parties agree, arise out of or in relation to the research work, joint projects, and course as a result of their joint efforts, shall belong to both the parties.

Under this MoU signed by RU and BiOZEEN, both the parties agreed to establish principles for collaboration and to develop mutually beneficial academic programs.

DURATION AND TERMINATION OF THE MOU:

This MoU will take effect from the date it is signed by representatives of the parties. It will remain valid for three years and may be continued after suitable review and agreement. If either party is found violating the above-mentioned terms or conditions of the MoU, the other party may terminate the MoU by giving written notice of six months in advance. Once terminated, neither REVA University nor BiOZEEN will be responsible for any losses, financial or otherwise, which the other party may suffer. In the event of termination of the agreement, the rights and obligations of the parties shall be settled by mutual discussions and consensus. However, obligations and commitments already contracted for and involving both parties be honored and continued by both parties until such commitments are completed.

ARBITRATION:

Any disputes that arise between the parties shall be amicable resolved within Bengaluru City limits.

ASSIGNMENT OF THE AGREEMENT

The right and/or liabilities arising to any party to this agreement shall not be assigned except with the written consent of the other party and subject to such terms and conditions as may be mutually agreed upon.



This MoU signed subjects to approval of the respective Academic / Administrative bodies as attested to this deed on 22.04.2021.

For REVA University

For BIOZEEN-Bangalore BioTech Labs Pvt. Ltd.

Signature:

Signature:

Name : Dr. M Dhanamjaya

Name:

Designation : **Vice Chancellor**

Designation: **Director**

Seal: **Dr. M. Dhanamjaya**
Vice Chancellor
REVA University
Rukmini Knowledge Park, Kattigenahalli
Yelahanka, Bengaluru- 560064

Seal:



For BANGALORE BIOTECH LABS PVT. LTD.

WITNESS 1:

WITNESS 1:

Signature:

Signature:
Head of Research and Development

Name: Prof. Shilpa BR

Name: Dr. Nellaiah Biozeen

Designation: Deputy Director
Director

Designation: Training and R&D

School of Applied Sciences

REVA University, Rukmini Knowledge Park,
Kattigenahalli, Yelahanka, Bengaluru - 560064

WITNESS 2:

WITNESS 2:

Signature:

Signature:

Name: Dr. Manjula K. R

Name: Vinobiah B

Designation: Associate Professor

Designation: Manager Training

Place: Bengaluru.

Place: Bengaluru.

Date: 22.04.2021

Date: 22.04.2021



सत्यमेव जयते

INDIA NON JUDICIAL

Government of Karnataka

Rs. 100

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Certificate No.	: IN-KA08019310530577T
Certificate Issued Date	: 22-Apr-2021 01:56 PM
Account Reference	: NONACC (FI)/ kacarb08/ DODDABALLAPURU/ KA-BF
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Purchased by	: REVA UNIVERSITY
Description of Document	: Article 12 Bond
Description	: M O U
Consideration Price (Rs.)	: 0 (Zero)
First Party	: REVA UNIVERSITY
Second Party	: AZYME BIOSCIENCE PVT LTD
Stamp Duty Paid By	: REVA UNIVERSITY
Stamp Duty Amount (Rs.)	: 100 (One Hundred only)

सत्यमेव जयते



Please write or type below this line

MEMORANDUM OF UNDERSTANDING

This Memorandum of Understanding (MoU) is made and executed at Bengaluru on 21st April, 2021 (21.04.2021) between:

Department of Biotechnology, School of Applied Sciences, REVA University, Rukmini Knowledge Park, Kattigenahalli, Bengaluru – 560 064, Karnataka, India.

Statutory Alert:

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- 2 Any discrepancy in the details of this Certificate and as available on the website / Mobile App renders it invalid
- 3 The onus of checking the legitimacy is on the users of the certificate
- 3 In case of any discrepancy please inform the Competent Authority

Registrar
REVA University
Bengaluru - 560 064

AND

Azyme Biosciences Pvt. Ltd., # 1188/20, 26th main, Opp. Ragigudda Temple Arch Jayanagar 9th block, Bengaluru - 560 069, Karnataka, India

PRELUDE:

REVA University (hereafter referred to as RU) has been established by the Act of Government of Karnataka as a REVA University Act, 2012 as a Private University and notified Karnataka State Gazettee notification No.80 SAMVYASHAE SHASANA 2012 Bengaluru dated 7th February 2013 and has been recognized by UGC as per section 2(A) of UGC Act. The University imparts education and offers programs and courses leading to Graduate, Post- graduate, PhD and such other Degrees, Diplomas and Certificated as provided in its objectives and functions. The campus is located at Rukmini Knowledge Park, Kattigenahalli, Yelahanka, Bengaluru - 560 064 has well-furnished infrastructure facilities for academic and research activities. The University always strives to maintain quality and high standards of education and promotes students to develop their overall personality to become good citizens in the country.

Azyme Biosciences Pvt. Ltd., # 1188/20, 26th main, Opp Ragigudda Temple Arch Jayanagar 9th block, Bengaluru - 560 069, Karnataka, India is intended with prime idea of skill development organization that truly connects academia and research with industrial practices. Azyme Biosciences is a consortium of experienced scientists and research scholars having state of the art laboratory infrastructure with the use of newest and most innovative research methodologies. Azyme Biosciences offers students an opportunity to experience cutting edge research environment prior of pursuing their career and providing scientific laboratory services (hereinafter referred to as "**Second Party**" which term and expression shall mean and include its nominees and permitted assigns), of the **OTHER PART**.

PREAMBLE:

Memorandum of Understanding between **REVA University**, Rukmini Knowledge Park, Kattigenahalli, Bengaluru - 560 064 and **Azyme Biosciences Pvt. Ltd.**, represented by its undersigned of the one part and represented by its undersigned of the other part:

RECITAL:

Where, REVA University and **Azyme Biosciences Pvt. Ltd.**, Jayanagar 9th Block, Bengaluru - 560 069 shall be hereinafter jointly referred to the parties and singularly as party.

The parties have decided to agree to establish academic and research collaborations in the areas of mutual interest and in accordance with terms and conditions set forth in this Memorandum of Understanding (MoU). Both the parties agree on the following activities:

Academics:

1. Exposing students for Biotechnological skills with *Azyme Biosciences* infrastructure and business models.
2. Both the parties shall explore the possibilities of offering joint courses in the field of Biotechnology/ Life Science domain here after
3. **Azyme Biosciences** Pvt. Ltd. shall offer certificate training courses to students of REVA University at company's pilot lab in Bengaluru. The course modules to be offered would be as mentioned in Annexure A attached. (Minimum Number of students enrolled for module would be 5 and Maximum Number of students would be 15)
4. **Azyme Biosciences** Pvt. Ltd. shall offer hands on training for students related to the domain of Food Biotechnology/Life Science in the final (academic) year as per the course module.
5. The course structure and schedule will be determined from time to time as agreed by both parties.
6. The course fee for all modules will be handled through REVA University in a pre-determined manner.
7. **Azyme Biosciences** Pvt. Ltd. shall allow REVA University students for industrial visit as per the convenience and company policy.
8. **Azyme Biosciences** Pvt. Ltd. shall provide faculty development programs to the academic faculty members from REVA University with mutual understanding as per the company policy.
9. Both the parties shall mutually exchange any relevant information on teaching, research, and scientific programs.
10. **Azyme Biosciences** Pvt. Ltd. shall offer Academic / Research projects/Internships and training programs relevant to both parties.
11. Both the parties shall jointly organize seminars, conferences, or workshops on topics of mutual interest and to invite each other's Scientists/Faculty and Staff to participate therein.
12. **Azyme Biosciences** Pvt. Ltd shall assist students for placement at relevant industries/ organizations.

Research:

1. REVA University and **Azyme Biosciences** Pvt. Ltd. shall promote active interaction among their staff and explore possibilities for undertaking commercial or government funded joint research and development projects.

2. Scientists, Research Scholars and Ph.D candidates of both institutions will be encouraged to apply for sponsored or funded projects keeping in view the interests and philosophies of the respective institutions.
3. **Azyme Biosciences Pvt. Ltd.** shall encourage and allow REVA University faculty members for product development in the field of life sciences with mutual consent.
4. **Azyme Biosciences Pvt. Ltd.** shall allow Project students and research scholars of REVA University who wish to pursue a part of their research work to utilize the company's infrastructure for a nominal fee.
5. Both the parties shall get involved in consultancy activities concerned to commercial projects and academic research for a nominal fee determined on case-by-case basis between both parties.

Intellectual Property Right:

1. Any work/products that the parties agree, arise out of or in relation to the research work, joint projects and course as a result of their joint efforts, shall belong to both the parties.

Whereas, under this MoU signed by RU and **Azyme Biosciences Pvt. Ltd.**, Bengaluru, both the parties agreed to establish principles for collaboration and to develop mutually beneficial academic programs.

DURATION AND TERMINATION OF THE MOU:

This MoU will take effect from the date it is signed by representatives of the parties. It will remain valid for three years and may be continued after suitable review and agreement. If either party is found violating the above-mentioned terms or conditions of the MoU, the other party may terminate the MoU by giving written notice of six months in advance. Once terminated, neither REVA University nor **Azyme Biosciences Pvt. Ltd.**, will be responsible for any losses, financial or otherwise, which the other party may suffer. In the event of termination of the agreement, the rights and obligations of the parties shall be settled by mutual discussions and consensus. However, obligations and commitments already contracted for and involving both parties be honored and continued by both parties until such commitments are completed.

ARBITRATION

Any disputes that arise between the parties shall be amicable resolved within Bengaluru city limits.

ASSIGNMENT OF THE AGREEMENT


The right and/or liabilities arising to any party to this agreement shall not be assigned except with the written consent of the other party and subject to such terms and conditions as may be mutually agreed upon.

This MoU signed subjects to approval of the respective academic / administrative bodies as attested to this deed on 21.04.2021.

SIGNED BY:


Vice Chancellor
REVA University,
Bengaluru.
Dr. M. Dhanamjaya
Vice Chancellor
REVA University
Rukmini Knowledge Park, Kattigenahalli
Yelahanka, Bengaluru- 560064

Witness:



1) Prof. Shilpa B.R.
Deputy Director SoAS
School of Applied Sciences
REVA University, Rukmini Knowledge Park
Kattigenahalli, Yelahanka, Bengaluru - 560064
2) Dr. Ramachandra R
Assistant Prof.,
Dept. of Biotechnology

SIGNED BY BIOSCIENCES PVT. LTD.
For AZYME

Director

Dr. Mahesh M
CEO, Azyme Biosciences Pvt. Ltd.,
Bengaluru.

Witness:


1) Mr. Purushotham
Junior Scientist.

Place: Bengaluru.
Date: 21.04.2021.



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Government of Karnataka

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Certificate No. : IN-KA13260034009070U
Certificate Issued Date : 20-Jan-2022 10:37 AM
Account Reference : NONACC (FI)/ kacrsf108/ R T NAGAR/ KA-BA
Unique Doc. Reference : SUBIN-KAKACRSFL0868694732443284U
Purchased by : REVA UNIVERSITY
Description of Document : Article 37 Note or Memorandum
Description : MOU
Consideration Price (Rs.) : 0
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First Party : REVA UNIVERSITY
Second Party : BANGALORE BIOINNOVATION CENTRE
Stamp Duty Paid By : REVA UNIVERSITY
Stamp Duty Amount(Rs.) : 100
(One Hundred only)

सत्यमेव जयते



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Memorandum of Understanding

**REVA University, Bengaluru
And
Bangalore Bioinnovation Centre (BBC)**

**for
Collaborative Research and Development**



Statutory Alert:

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1

Vice-Chancellor
REVA University, Rukmini Knowledge Park
Katrigehalli, Yalahanka, Bengaluru - 560 064
Registered
REVA University
Bengaluru - 560 064

1. Purpose, Objectives and Goals:

1.1. Purpose

This Memorandum of Understanding (MoU) establishes the framework for collaborative research and development, education, and training efforts (hereafter called “Collaboration”)

Between

REVA University (hereafter referred to as RU) has been established by the Act of Government of Karnataka as a REVA University Act, 2012 as a Private University and notified Karnataka State Gazette Notification No.80 SAMVYASHAE SHASANA 2012 Bangalore dated 7th February 2013 and has been recognized by UGC as per section 2(A) of UGC Act. The University imparts education and offers programs and courses leading to Graduate, Post- graduate, PhD and such other Degrees, Diplomas and Certificates as provided in its objectives and functions. The campus is located at Rukmini Knowledge Park, Kattigenahalli, Yelahanka, Bangalore-64 has well-furnished infrastructure facilities for academic and research activities. The University always strives to maintain quality and high standards of education and promotes students to develop their overall personality to become good citizens in the country.

And

Bangalore Bio-Innovation Centre, Bengaluru (hereafter called “BBC”), a section 8 company engaged in nurturing innovations in Life Sciences and a joint initiation of Department of Biotechnology, Govt of India and Department of Electronics, IT, BT & S&T Govt of Karnataka.

Collaborations under this MoU are focused on collaborative R&D in Broad Areas of Life Sciences. The MoU is intended to expedite research and development of new methods and technologies that can be implemented in support of BBC’s mission as well as aimed at enhancing the quality of research and education at REVA University.

Both REVA University and BBC believe that this Collaboration will contribute to accelerate methods and technology advancement in various fields of biological sciences. The two organizations further believe that successful Collaboration will leverage beneficial results via method and technology transfer, education, and training.

1.2. **Objectives:** REVA University and BBC will work collaboratively to expedite development of methods and technologies in Life Sciences that are needed to address the critical national needs.




Registrar
REVA University
Bengaluru - 560 064

1.3. Goals

- i. Identify methods and Life Sciences-technology needs, formulate research and development projects that address our national needs, and establish arrangements that describe how personnel and resources of REVA University and BBC will be effectively utilized to perform research and development projects addressing the national needs (for example Enzyme Discovery, application of Molecular Dynamics, Quantum Mechanics etc.).
- ii. Perform collaborative research and development projects in an expeditious manner.
- iii. Setup education and training programs at REVA University as per prevailing UGC/other regulation with resource persons from BBC as well as REVA University. These may involve UG/ PG/ M.Phil/ Ph.D/ Post-Doc programs with guides and co-guides from the two organizations, continuing education for BBC and other industry employees, short-term assignments at BBC for REVA University faculty or staff, etc.

2. BACKGROUND AND PROGRAM SCOPE:

2.1 Background.

R&D in biological sciences around the world has provided great impetus for the development of country's pharmaceutical industry that can be utilized to meet our health, bio-technology, and service sector needs. Although the national laboratories have been in the forefront of R&D, commercial business successes are wanting. Acute shortage of skilled engineers, lack of relevant academic and research programs beyond the critical mass in the universities, and poor university-industry collaboration are the causes for this situation. Hence there is a pressing need for collaborative R&D between the academic and research laboratories and the industry.

REVA University has embarked on setting up facilities with R&D thrust in all departments, both in the clinical and basic sciences, under national and international collaborations. The staff and students are actively involved in clinical and research activities, including publication of papers in reputed professional journals. In addition, sponsored R&D programs will also be carried out.

2.2 Program Scope.

Under this MoU the two organizations REVA University and BBC -will meet on a Quaternary basis to identify areas of research and development, education, and training that can be efficiently addressed through a collaborative approach. R&D programs and the education and training programs will be carried out in REVA University relevant centre



[Signature] Vice-Chancellor
REVA University, Rukmini Knowledge Park
Halli, Yelahanka, Bengaluru - 560 064
Registrar
REVA University
Bengaluru - 560 064

and at BBC. Further productizing the collaborative R&D efforts at either organization, such as through entrepreneurial incubation cells, also may be carried out under this MoU.

3. RESPONSIBILITIES:

3.1 REVA University agrees to:

- i. Work with BBC to exchange information consistent with areas of collaboration, develop, formulate, and submit proposals of interest singly or jointly with BBC to DST, DBT, DRDO and other national laboratories (such as R&D projects, technology assessment, and testing), and carry out such sponsored projects. Describe specific R&D projects, education activities, and training programs that will be jointly pursued by REVA University and BBC.
- ii. Facilitate relevant (UG/ PG /M.Phil/ Ph.D/ Post-Doc) programs for qualified BBC employees; the Guide/Major Advisor shall be from REVA University and Co-guide shall be from BBC for each such program the admissions will be governed by the UGC regulations in this regard from time to time.
- iii. Facilitate its relevant center (laboratories, library, office support, fields, etc.) for conducting such research work at as per the policies.
- iv. Participate in joint technical activities (e.g., inspections, workgroups, scientific or engineering panels) with representatives from BBC, and other organizations which may be established to provide technical advice and guidance on issues related to the national needs.
- v. Assign a Management Point of Contact and Technical Lead(s) for interactions with the BBC.
- vi. Provide, in cooperation with BBC Management Point of Contact, annual executive summary report on the progress made under this MoU for each of the Collaborations, or other cooperative activities, that are developed as part of this agreement (MoU).
- vii. Record, produce and maintain minutes of meeting as described in this MoU.

3.2 BBC AGREES TO:

- i. Work with REVA University to exchange information consistent with areas of collaboration, develop, formulate, and submit proposals of interest singly or jointly with REVA University to DST, DBT, DRDO and other national laboratories (such as R&D projects, technology assessment, testing, calibration, and consultancy), and carry out such sponsored projects. Describe specific R&D projects, educational activities, and training programs that will be jointly pursued by REVA University and BBC.



- ii. Facilitate research training for REVA University undergraduate and post graduate students in areas of interest to COMPANY and relevant to the programs pursued by the students, and make provisions (laboratories, library, workshop, office support, etc.) for such training as per the policies.
- iii. Participate in joint technical activities (e.g., inspections, workgroups, scientific or engineering panels) with representatives from REVA University, and other organizations which may be established to provide technical advice and guidance on issues related to the needs of REVA University (such as curriculum or laboratories development).
- iv. Assign a Management Point of Contact and Technical Lead(s) for interactions with REVA University.
- v. Provide, in cooperation with REVA University Management Point of Contact, an annual executive summary report on the progress made under this MoU for each of the Collaboration, or other cooperative activities, that are developed as part of this agreement (MoU).

4. MEMORANDUM OF UNDERSTANDING (MoU) ADMINISTRATION:

4.1. Reports.

The status of work performed under this MoU will be reviewed on an annual basis at REVA University, Bangalore. The BBC Management Point of Contact will take the lead and be responsible for organizing meetings (planning meetings and annual meetings), developing agenda and recording results of the meetings. Minutes of the meetings will be produced and distributed to meeting participants as well as to the Director of BBC and REVA University. A central file (retained by REVA University) will be maintained.

4.2. Information Releases:

Point of Contact, BBC and Point of Contact, REVA University will send email and letter to the other party requesting such a release and if not responded within 15 days, another reminder and if no response within a week, it will be deemed as accepted.

4.3. Security Classification:

The highest security classification applied by BBC will govern the handling of information and reports under this MoU, as deemed appropriate. The security classification and procedures will be stipulated in each report.



4.4. Facility Security, Health, Safety, and Environmental Compliance:

The host facility's security, health, safety, and environmental compliance programs will be followed by personnel when engaged in work activities as outlined in this MoU. Workers Injury claims shall be covered by the employee's agency.

4.5. Reimbursement Policy:

Each party to this agreement will handle and expend its own funds, except as otherwise noted in this MoU. The responsibilities assumed by each party are contingent upon funds being available from which legally incurred expenditures may be met.

4.6. Annual Management Meetings:

REVA University and BBC will meet annually to plan and coordinate Collaboration under this MoU. Such meetings will be held at a mutually agreed upon location and on a date that is compatible with the planning and budgeting cycle of each organization. At this meeting, recommendations for adjustments to current activities, projects, and budget priorities will be proposed and agreed upon by the Management Points of Contact for submission to the REVA University and BBC Directors for further action.

4.7. Semi-Annual Technical Discussions:

REVA University and BBC will meet at least twice a year to discuss technical progress under each project or activity. These reviews will require technical information exchange by REVA University and BBC Technical Leads. These meetings may include individuals from outside of REVA University and BBC as mutually agreed to by the respective Management Points of Contact.

4.8. Technical Lead Responsibilities:

Technical Leads for each project or activity will strive to engage in:

- Providing technical information exchange consistent with agency regulations governing the exchange or release of information
- Delivering written or verbal technical evaluations of progress
- Conducting visit to sites where research is underway
- Organizing and participating in technical workshops and scientist-to-scientist meetings
- Reporting on any exceptional accomplishments from, or impediments to, successful program or project execution



Recommending improvements for the MoU activities



4.9. Approvals:

Point of Contact, BBC and Point of Contact, REVA University will send email and letter to the other party requesting such a release and if not responded within 15 days, another reminder and if no response within a week, it will be deemed as accepted.

4.10. Inventions and Licensing:

Activities conducted to carry out this MoU and any project or other extramural arrangements may result in products or processes that are patentable or otherwise proprietary. The organization whose work results in the invention shall disclose the invention to the other organization and then prepare, file, and prosecute patent applications. If protection is granted, the inventing organization will manage the invention in accordance with its rules and regulations. If the invention is from BBC - sponsored project, securing the patent rights shall be in accordance with the terms of such project. Inventions resulting from joint research and development by both REVA University and BBC employees shall be handled as jointly agreed to at the time of the disclosure and will be jointly shared by the contributors of BBC and REVA University.

Publication/IPR

- 4.10.1. The findings/outcomes shall be compiled and presented at a time to be decided by both the institutions.
- 4.10.2. Publication will have the joint authorship from BBC and REVA University and decision on publication will be based on mutual agreement. At no stage a single party will publish the results unilaterally or use the findings in any other research projects/studies in any matter whatsoever.
- 4.10.3. The corresponding author organization will be based on the mutual agreement depending on the contribution of research work in terms of domain expertise, infrastructure, man power etc., with joint corresponding authorship from other organization.
- 4.10.4. Intellectual property Right (IPR) / Patents of the joint-research projects will be jointly shared by the contributors of BBC and REVA University.

Coordination Committee

- 4.11. To monitor and review the collaborative program between the BBC REVA University coordination committee is formed. Prof. Shilpa BR, Deputy Director, School of Applied Sciences is the point of contact from REVA University and Dr. Jitendra Kumar is the point of contact from BBC unless otherwise notified.



- 4.12. Principal of REVA University or his nominee would be coordinating the research study in areas where they have domain expertise and which have been mutually agreed by both the organizations.
- 4.13. MD, BBC or his nominee would coordinate the research study in areas of their core competency.

5. PERIOD OF AGREEMENT:

- 5.1 This MoU shall be effective for five years from the date of the last signature unless canceled in writing by either of the participating organization with 60 days' notice.
- 5.2 Conflicts that may arise after the MoU is in effect will be resolved by REVA University and BBC Management Points of Contact. If conflicts cannot be resolved at this level, then they will be taken to the respective Directors of REVA University and BBC. If conflicts cannot be resolved at this level, then the signatory authorities for this MoU will resolve the conflicts either by coming to informal agreement or by amending the MoU.
- 5.3 This MoU will be reviewed annually by the Management Points of Contact to determine if any changes or amendments should be incorporated. Such changes or amendments will be formally incorporated in the MoU within 90 days of the annual review.
- 5.4 Within 30 days of its expiry, this MoU may be renewed on same terms as on the date of expiry upon a signed agreement of renewal between the respective Directors of REVA University and BBC.

6. NAMES AND ADDRESSES OF PARTIES:

- 6.1 Dr.M Dhananjaya
Vice Chancellor
REVA University
- 6.2 Dr Jitendra Kumar
Managing Director,
Bangalore Bioinnovation Centre

7. GENERAL PROVISIONS:

- 7.1. Nothing in this MoU supersedes any other memorandum of understanding held by either party.




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Bengaluru - 560 064

7.2. This MoU in no way restricts the parties from participating in similar activities or arrangements with other public or private agencies, organizations, or individuals.

7.3. This MoU describes in general terms, the basis upon which the parties intend to cooperate. It does not create binding, enforceable obligations against any party.

**Approved and accepted for
REVA University**

**Approved and accepted for
Bangalore Bioinnovation Centre**

<p>On behalf of REVA University, Bengaluru. Signed by</p>	<p>On behalf of Bangalore Bioinnovation Centre, Bengaluru. Signed by</p>
 <p>Dr. M. Dhanamjaya Vice-Chancellor REVA University Vice-Chancellor REVA University, Rukmini Knowledge Park Mattigenahalli, Yelahanka, Bengaluru-560 064 Date: 23.02.2022.</p>	  <p>Dr Jitendra Kumar Managing Director Bangalore Bioinnovation Centre Date: 23.02.2022.</p>
<p>Witness:</p>  <p>1. Dr. Santosh Anand Asst. professor - Biotechnology REVA University</p>   <p>2. Prof. Prashantha C N Asst. professor - Biotechnology REVA University</p> 	<p>Witness:</p>  <p>1. Dr Veeranna S Senior Scientific Officer Bangalore Bioinnovation Centre</p>  <p>2. Ms Ankita Puranik Innovation and Ecosystem Development Officer Bangalore Bioinnovation Centre</p>

PRIVACY & DATA PROTECTION AGREEMENT
On the Processing of Personal Information/Data by Contract
("Data Processing Agreement"/ "DPA")

By and Between
"Infosys"

[Infosys Limited] (and their subsidiaries, parent, and affiliates)
with its registered office at

[Plot No. 44 & 97A, Electronics City, Hosur Road, Bangalore -560100, Karnataka, India]

And

"Partner"

[REVA University] (and their subsidiaries, parent, and affiliates)
with its registered office at

[Rukmini Knowledge Park, Kattigenahalli, Yelahanka, Bangalore-560064, Karnataka, India]

each a **"Party"**; together **"Parties"**

1. Definitions:

- i. **'Personal data/information'** (hereinafter **"PI"**) shall mean any information/data relating to an identified or identifiable natural person ('data subject'). For the purpose of this definition, PI may also include Sensitive Personal Information, as per Applicable Privacy Laws, including without limited to (i) a first name, last name or initials; (ii) a home or other physical address, including street name and name of city or town; (iii) an email address or other online contact information; (iv) a telephone number; (v) a social security number, tax ID number or other government-issued identifier; (vi) an Internet Protocol ("IP") address or host name that identifies an individual; (vii) a persistent identifier held in a "cookie" that is combined with other available data that identifies an individual; (viii) birth dates; (ix) Personally identifiable financial information, passport related details, (x) PHI (Protected Health Information) identifiers, racial or ethnic origin, political opinions, religious or philosophical beliefs, trade-union membership, health or sex life. Additionally, to the extent any other information (such as, but not necessarily limited to, IP addresses, other unique identifier, or biometric information) is associated or combined with PI, then such information also will be considered PI. PI may as well include information relating to legal entities, if so required by the applicable law.
- ii. **'Applicable Privacy Laws'** refers to all laws, rules, regulations and standards that are designed to protect the privacy rights or privacy expectations of the Parties (the term includes all subsidiaries and affiliates of the Parties), their employees, clients and client - customers and any other third party vendors.
- iii. **'Data Controller'** or **'Controller'** means the entity that determines the purposes and means of Processing of Personal Data, either alone or jointly with another entity.
- iv. **'Data Subject'** means any individual whose Personal Information is collected, used and/or processed under this DPA for the business purpose(s) of the Parties. Explanation: list includes employees, clients, client customers, agents, contractors.
- v. **'Technical and Organizational Security Measures'** means those measures aimed at protecting personal data against accidental or unlawful destruction or accidental loss, alteration, unauthorized disclosure or access, in particular where the processing involves the transmission of data over a network, and against all other unlawful forms of processing.


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- vi. 'Personal Data' Breach' means a breach of security leading to the accidental or unlawful destruction, loss, alteration, unauthorized disclosure of, or access to, personal data transmitted, stored or otherwise processed.
- vii. 'Processing' or any other derivative thereof, means any operation or set of operations performed upon PI, whether or not by automatic means, such as collection, recording, organization, structuring, storage, adaptation or alteration, consultation, use, disclosure by transmission, dissemination or otherwise making available, alignment or combination, restriction, blocking, erasure or destruction.

2. Processing of Personal Data

- i. The parties agree that in connection with the main service agreement (hereinafter "Agreement"), Partner and Infosys shall each act as a data controller with regard to use and processing of personal information for the purposes contemplated by the Agreement. The Parties shall each comply with Applicable Privacy Laws directly applicable to their respective use of each other's Personal Information, relating to the collection, use, processing, protection or disclosure of Personal Information, in the course of carrying out their respective obligations under this Agreement. Both Parties agree to negotiate in good faith to amend the DPA and the Agreement as necessary to address changes to Applicable Privacy Laws.
- ii. If Partner provides Infosys with Personal Information under this Agreement, Partner agrees to provide all relevant notices and obtain any consents required to share the information with Infosys and such notices and consents must sufficiently inform data subjects of the purposes for which personal information is collected.
- iii. The Partner agrees in respect of any such PI supplied to it by Infosys that it shall: (a) only act as necessary for the purpose of rendering services warranted by Infosys; (b) regarding the processing of such PI under this Agreement it shall ensure that appropriate technical and organizational measures shall be taken against unauthorized or unlawful processing of PI and against accidental loss or destruction of, or damage to, the personal data; and (c) comply with any reasonable request made by Infosys to ensure compliance with the measures contained in this Section. The Partner will not process, or refrain from processing, any act that puts Infosys in breach under the Applicable Privacy Laws and shall indemnify Infosys and its officers, directors and employees for any breach of any Applicable Privacy Laws, which renders Infosys liable for any costs, claims or expenses.
- iv. Nothing in this Agreement shall be deemed to prevent the Parties from taking steps it reasonably deems necessary to comply with the Applicable Privacy Laws.
- v. For the purposes of this DPA, "Applicable Privacy Laws" means all laws, codes, statutes, rules, and regulations with which each Party is legally obliged to comply during the term of this Agreement.

The undersigned represent that they are duly authorized representatives of the parties and have full authority to bind the parties.

For Infosys

Date:

11.04.2022

For Partner

Date: 4/1/2022


Registrar
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Bengaluru - 560 064



Place: **Bangalore**

Name: **Mr. Thirumala Arohi**

Title: **Senior Vice President and Head,
Education Training and Assessment**

Signature (with seal):

Head-Education, Training and Assessment
INFOSYS LIMITED
Education, Training & Assessment
44, Electronics City, Hosur Road
BANGALORE - 560 100 INDIA

- Please fill all the required fields in detail.
- Post entering all the details, print this entire document and get the wet signature (handwritten) by authorized signatory along with institution / organization's official seal.
- Post the signature please scan and share the duly signed PDF copy to Springboard- support@infosys.com

Place: **Bangalore**

Name: **Dr. M. Dhanamjaya**

Title: **Vice Chancellor, REVA University**

Signature (with seal):

Dr. M. Dhanamjaya
Vice Chancellor
REVA University
Rukmini Knowledge Park, Kattigenahalli
Yelahanka, Bengaluru- 560064

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REVA University
Bengaluru - 560 064



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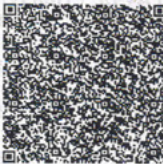
Government of Karnataka

Rs. 100

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Certificate Issued Date : 12-Aug-2021 03:09 PM
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Description of Document : Article 37 Note or Memorandum
Description : MOU
Consideration Price (Rs.) : 0
(Zero)
First Party : REVA UNIVERSITY
Second Party : WINSUN GLOBAL TECH
Stamp Duty Paid By : REVA UNIVERSITY
Stamp Duty Amount(Rs.) : 100
(One Hundred only)

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MEMORANDUM OF UNDERSTANDING

This Memorandum of Understanding (MOU), hereinafter referred to as the Memorandum, entered into on 02nd September 2021, by and between **REVA University** residing at **Rukmini Knowledge Park Kattigenahalli, Yelahanka, Bengaluru - 560 064**, hereinafter referred to as the "First Party,"

Signature

Statutory Alert:

1. The authenticity of this Stamp certificate should be verified at 'www.shcilestamp.com' or using e-Stamp Mobile App of Stock Holding. Any discrepancy in the details on this Certificate and as available on the website / Mobile App renders it invalid.
2. The onus of checking the legitimacy is on the users of the certificate.
3. In case of any discrepancy please inform the Competent Authority.

Signature

Registrar
REVA University
Bengaluru - 560 064

And

WINSUN GLOBAL TECH residing at **2nd Main, 3rd Cross, Nagarabhavi (Manasa Nagar), Bengaluru-560 072**, hereinafter referred to as the "Second Party," and collectively known as the "Parties" for the purpose of establishing and achieving various goals and objectives relating to the internship, placement assistance, technical project support for the students of School of Mechanical Engineering, REVA University.

WHEREAS, the aforementioned Parties desire to work together to accomplish the goals and objectives set forth;

PURPOSE AND SCOPE

The Parties intend for this Memorandum of Understanding to provide the cornerstone and structure for the success of **students internships, placement assistance, technical project support, training and certification program for students, promoting such other activities/programs as mutually agreed from time to time.**

OBJECTIVE

The Parties shall endeavor to work together to contribute to the cause of engineering fraternity through collaboration between parties. This MoU is to encourage Industry-Academia interface since it meets the industry's needs and expectations and the academic aspirations.

RESPONSIBILITIES AND OBLIGATIONS OF THE PARTIES

It is the desire and the wish of the aforementioned Parties to this MOU Agreement that this document should not and thus shall not establish nor create any form or manner of a formal agreement or indenture, but rather an agreement between the Parties to work together in such a manner that would promote a genuine atmosphere of collaboration related to the **internships, student projects and placements.**

TERMS OF UNDERSTANDING

The term of this Memorandum of Understanding shall be for a period of three year from the aforementioned effective date and may be extended upon written mutual agreement of both Parties.

AMENDMENT OR CANCELLATION OF THIS MEMORANDUM

This Memorandum of Understanding may be amended or modified at any time in writing by mutual consent of both parties.



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Bengaluru - 560 064

In addition, the Memorandum of Understanding may be cancelled by either party with thirty days advance written notice, with the exception where cause for cancellation may include, but is not limited to, a material and significant breach of any of the provisions contained herein, when it may be cancelled upon delivery of written notice to the other party.

GENERAL PROVISIONS

The Parties acknowledge and understand that they must be able to fulfill their responsibilities under this Memorandum of Understanding in accordance with the terms and conditions between the organisations. Nothing in the Memorandum is intended to negate or otherwise render ineffective any such provisions or operating procedures. The parties assume full responsibility for their performance under the terms of this Memorandum.

LIMITATION OF LIABILITY

No rights or limitation of rights shall arise or be assumed between the Parties as a result of the terms of this Memorandum of Understanding.

ARBITRATION/MEDIATION DISPUTE RESOLUTION

The Parties to this Memorandum of Understanding agree that should any dispute arise through any aspect of this relationship, including, but not limited to, any matters, disputes or claims, the parties shall confer in good faith to promptly resolve any dispute. In the event that the parties are unable to resolve the issue or dispute between them, then the matter shall be mediated and/or arbitrated in an attempt to resolve any and all issues between the parties.

The parties agree that any claim or dispute that arises from for through this agreement, the relationship or obligations contemplated or outlined within this agreement, if not resolved through mediation, shall then go to and be resolved through final and binding arbitration. Any decision reached by the Arbitrator shall be final and binding and, if required, may be entered as a judgment in any court having jurisdiction.

In the event that any court having jurisdiction should determine that any portion of this Agreement to be invalid or unenforceable, only that portion shall be deemed invalid and not effective, while the balance of this Agreement shall remain in full effect and enforceable.

NOTICE

Any notice or communication required or permitted under this Memorandum shall be sufficiently given if delivered in person or by certified mail, return receipt requested, to the address set forth in the opening paragraph or to such address as one may have furnished to the other in writing.






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ASSIGNMENT

Neither party to this Memorandum of Understanding may assign or transfer the responsibilities or agreement made herein without the prior written consent of the non-assigning party, which approval shall not be unreasonably withheld.

ENTIRE UNDERSTANDING

The herein contained Memorandum of Understanding constitutes the entire understanding of the Parties pertaining to all matters contemplated hereunder at this time. The Parties signing this MOU desire or intend that any implementing contract, license, or other agreement entered into between the Parties subsequent here to shall supersede and preempt any conflicting provision of this Memorandum of Understanding whether written or oral.

MOU SUMMARIZATION

FURTHERMORE, the Parties to this MOU have mutually acknowledged and agreed to the following:

- It is not the intent of this MOU to restrict the Parties to this Agreement from their involvement or participation with any other public or private individuals, agencies or organizations.
- It is not the intent or purpose of this MOU to create any rights, benefits and/or trust responsibilities by or between the parties.
- The MOU shall in no way hold or obligate either Party to supply or transfer funds to maintain and/or sustain the **collaboration**.
- The Parties to this MOU have the right to individually or jointly terminate their participation in this Agreement provided that advanced written notice is delivered to the other party.
- Upon the signing of this MOU by both Parties, this Agreement shall be in full force and effect.

AUTHORIZATION AND EXECUTION

The signing of this Memorandum of Understanding does not constitute a formal undertaking, and as such it simply intends that the signatories shall strive to reach, to the best of their abilities, the goals and objectives stated in this MOU.



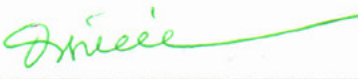

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This Agreement shall be signed by **Dr. M.Dhanamjaya , Vice Chancellor, REVA University, Bengaluru** and **Mr. Vinay B.C. & Mr. Sanjeev K G, Managing Directors, WINSUN GLOBAL TECH , Bengaluru** and shall be effective as of the date first written above.

 (First Party Signature)	<u>02/09/2021</u> (Date)
Dr. M.Dhanamjaya	
 (Second Party Signature)	 (Date)
Mr. Vinay B.C. & Mr. Sanjeev K.G.	

<i>WITNESS FOR FIRST PARTY</i>	<i>WITNESS FOR SECOND PARTY</i>
Signature: 	Signature: _____
Name: Dr. K.S. Narayanaswamy	Name: Mr. Devraj
Address: Director, School of Mechanical Engineering, REVA University, Bengaluru.	Address: HR Department, WINSUN GLOBAL TECH, Bengaluru.

Letter of Understanding (LOU)

Between

Connecting Dreams Foundation

And

REVA University

This Letter of Understanding (LOU) is effective from May 01, 2021, is entered into by and between

Connecting Dreams Foundation (CDF) having its office at B-41, Arya Nagar Apartments, I.P. Extension, Delhi, 110092 (Hereinafter referred to as “Vodafone Intelligent Solutions implementing partner”)

And

REVA University having its address at Rukmini Knowledge Park, Kattigenahalli, Yelahanka, Bengaluru, Karnataka 560064 (Hereinafter referred to as **REVA University**)

Recitals

- I. Whereas, Vodafone Intelligent Solutions represented by its country partner for India- Connecting Dreams Foundation, is skill building & learning digital platform where users can achieve industry relevant skills.
- II. Whereas, **REVA University** is a collegiate public state university located in Bengaluru, Karnataka. The institute empowers the students by inculcating various technical and soft skills.

Objectives

The objective of this LOU is to mutually complement both of the above parties energies, outreach and efforts to curate opportunities of collaborations, sharing of knowledge resources and jointly work on building capacities of the users through the _VOIS for Tech: Learning with Vodafone University Engagement Program.

Duration

This LOU is initially for one year duration w.e.f. May 01, 2021.

Operational Aspects

Where Connecting Dreams Foundation will on-board 'REVA University' as the 'Partner Institution' for VOIS for Tech program, and will work closely with REVA University's Team to leverage their student/learner base and other important stakeholders to build industry relevant skillset & enhance employability prospect of students/ learners by providing market-linked skills. Vodafone Intelligence Solutions country partner- Connecting Dreams Foundation will facilitate the on-boarding of learners (students) for the program for better learning opportunities.

In order to maintain the desired level of social media outreach, each party promises to follow the branding guidelines for social media amplification sent as a part of the communication package. With respect to the social media outreach, each party will also appoint an appropriate person(s) to represent the organization.

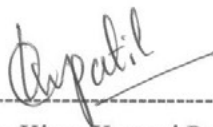
Termination and Extension of LOU

The partnership covered by this LOU shall terminate upon completion of the agreed upon period. In the event of non-compliance or breach by one of the parties of the obligations binding upon it, the other party may terminate the agreement with immediate effect if there is no resolution available for the breach. This LOU can be extended further as per the mutual agreement between the parties.

Financial Aspects

This LOU is of non-financial in nature where there is no financial transaction or provisioning involved.

The terms and provisions in this LOU also apply to any subsequent Addendum to this agreement. IN WITNESS WHEREOF, the parties hereto have executed this LOU on May 01, 2021.




Dr. Kiran Kumari Patil,
Director, University Industry Interaction Center,
REVA University



Jennifer Samantha Vincent
B-41, Arya Nagar Apartments, I.P.
Extension, Delhi, 110092




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Description of Document	: Article 37 Note or Memorandum
Description	: MOU
Consideration Price (Rs.)	: 0 (Zero)
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Second Party	: SECIQ TECHNOLOGIES LLP
Stamp Duty Paid By	: REVA ASPIRING YOUTH FOUNDATION
Stamp Duty Amount(Rs.)	: 100 (One Hundred only)

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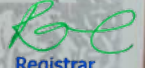
MEMORANDUM OF UNDERSTANDING

This Memorandum of Understanding (MoU) is made on this **16th August 2021, Monday** by and between

REVA Aspiring Youth Foundation (RAY) having its registered office REVA NEST, C V Raman Block, Rukmini Knowledge park, Kattigenahalli, Yelahanka, Bengaluru – 560064 (hereinafter referred to as “REVA NEST”) being the party of First part.

Statutory Alert:

1. The authenticity of this Stamp certificate should be verified at 'www.shoilestamp.com' or using e-Stamp Mobile App of 'Stock Holding'. Any discrepancy in the details on this Certificate and as available on the website / Mobile App renders it invalid.
2. The onus of checking the legitimacy is on the users of the certificate.
3. In case of any discrepancy please inform the Competent Authority.


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Bengaluru - 560 064

AND

SECIQ Technologies LLP represented by Mr. Bivin Jacob having registered office at NO.9, 5th , Cross, Kempegowda Layout, Nagenahalli, Dr. S. K Nagar Post Bangalore - 560077 (hereinafter referred to as “STARTUP”) being the party of **Second part**;

Whereas, the **STARTUP** is Security Consulting Firm and dedicated for providing best cyber Security Programs.

And Whereas, **REVA NEST** have the necessary expertise to offer advisory services to **STARTUP** to help them to commercialize their business.

REVA NEST provides assistance to the startups like business planning, ideation, mentoring, product / MVP Development, pilot assistance within and outside the institution, business development support, helping in marketing strategy, fund raising support etc.

Both Parties agree up on following points:

1. **REVA NEST**, shall provide the following services to the **STARTUP**

A. Access to incubation, mentoring, networking assistance and fundraising support

- Assistance in developing a business plan / business model around the idea / product / service.
- Assistance in figuring out the target customer segment and help in getting market validation by conducting the pilot project. Support in creating operational, sales, marketing and financial plan.
- Assistance in operations, sales and marketing strategy through its mentors and network of experts
- Assistance in gaining brand visibility through participation in various startup and business programs both nationally and internationally on a case to case basis.
- Assistance in creating a pitch deck and related documents for funding raising through internal college fund and via external angel investors / VCs on a case to case basis. **REVA NEST** will conduct internal demo days for selected startups.
- Facilitating meetings with relevant and potential seed and angel investors and ensuring necessary follow-ups in regards with these meetings.

- Assisting the **STARTUP** in preparing for pitching at various fund raising programs and also informing them about such upcoming opportunities.
- 2. Infrastructure & other requirements from first party**
- First Party will provide necessary infrastructure for office affairs, Working Space, Internet and Pantry to Second Party through **REVA NEST, Technology Business Incubation Center.**
 - Second Party will use Amenities available in the First Party such as Parking area, Pantry/ Food Court, Board Room, Conference rooms, and training rooms if required (based on availability and on free of cost basis).
 - Second Party can use Electronics Lab Equipment's, Embedded Labs, Measuring Instruments, Digital Boards, Development boards and other equipment's available with First Party (based on availability and prior approval from concerned authorities).
 - Second Party can use Software tools, Programming tools, Simulators and other Software tools available with First Party (Based on availability and prior approval from concerned authorities).
 - Second Party will get accessing to IEEE Library, Books Campus Library and Other Knowledge Sources available in the First Party.
 - First Party will provide consultation to Second Party in the required fields in order to achieve the Goal (consultation based on nominal fee).
 - First Party will Support Second Party in Research and Development, Marketing and Technology Survey, Brand Building and Marketing (through consultancy and internship programs).
- 3. Sharing of profit & other terms**
- Second Party will work as independent Entity from First Party
 - **SECIQ Technologies LLP** Can conduct training programs for REVA University students and the revenue generated through such training programs must be shared with **RAY Foundation - REVA NEST** in the ratio of 85:15 (85% for **SECIQ Technologies LLP.** and 15% for **RAY Foundation - REVA NEST**).
 - First Party at present needs **1 seater work space** and will pay accordingly (**Rs. 3500/- per Seat / per month, inclusive of all applicable taxes**).

- First Party Account Details (**Beneficiary Name: REVA ASPIRING YOUTH FOUNDATION, Bank Account Number: 6662000100010701, IFSC Code: KARB0000666, MICR CODE: 560052072**).
- If in future Second Party receives any financial assistance directly from First Party or any funding agencies through First Party then separate agreement will be executed indicating the mode of repayment or sharing of ownership.
- The MoU is valid for period of **12 months** from the date of signing the agreement. It can be further extended (if required) upon mutual consent.

4. Internship Program

- Second Party will provide internship opportunity to Graduates and Post Graduate students of First Party.
- Duration and mode of Internship, Selection of Students, Interview, Certification, Compensation and Termination of Internship rights reserved by First Party.

5. Recruitment Program

- Second Party will hire outgoing deserved students for different profiles available with them.
- Duration and mode of Job/Profile, Selection of Students, Interview, Certification, Compensation and Termination of resource rights reserved by Second Party.
- Second Party will keep rights to hire Employees from outside sources for different position on need basis; it includes both Part time and full time Employees.

6. Other important points

- **STARTUP** will also strictly adhere to the **quarter (3 Months) milestones** discussed and agreed upon as part of the incubation plan for the incubation. **STARTUP** will furnish regular progress reports as well as any other feedback sought regarding the progress work. In addition to this, **STARTUP** will have to appear for knowledge sessions, workshops, mentoring session and weekly / biweekly meeting with **REVA NEST** team or as and when called upon for important strategic decisions, failing to do so will lead to cancellation of the incubation and withdrawal of all services by **REVA NEST**.

- First Party Account Details (**Beneficiary Name: REVA ASPIRING YOUTH FOUNDATION, Bank Account Number: 6662000100010701, IFSC Code: KARB0000666, MICR CODE: 560052072**).
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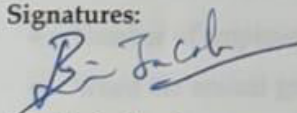
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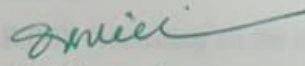
- Both the parties to this understanding shall discuss and finalize the details of these and all the activities on mutual acceptance basis, from time to time.
- Both the parties consent to carry out all the obligations mutually agreed upon from time to time.
- Neither party will be liable to the other for any delay or in failure of performance of their respective obligations under this agreement caused by occurrences of force major events or other factors reasonably beyond the control of both parties. In such events, both the parties shall inform each other of the circumstances in writing.
- Any alteration, agenda or edition to the MOU can be made by mutual agreement on the same.
- Both parties consent to settle differences, if any, amicably by friendly consultations. Generally, such consultations will be between the signatories to this agreement. The decision made so will be binding on both parties.
- In case of termination of this MOU in any circumstances, both parties will ensure the existing students/faculty/staff are not affected with regard to ongoing training, projector any other activity.
- This MOU shall come into force on the date set forth on the first page here of and shall remain in force till termination of MOU and in full agreement of the foregoing conditions, both the parties sign as under and deliver copies to each other.
- The Second Party agrees that he/she has read and understood all the terms & conditions mentioned in this MoU document as well as Annexure enclosed.

Signatures:



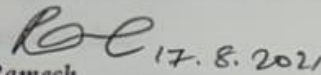
Mr. Bivin Jacob

Founder, Second Party



Dr. M. Dhanamjaya,

Vice Chancellor, First Party, Bengaluru

 17.8.2021

Dr. N Ramesh

Registrar, First Party, Bengaluru

 17/8/2021
Dr. Kiran Kumari Patil

Director, REVA-NEST, Bengaluru



Registrar
REVA University
Bengaluru - 560 064

INDIA NON JUDICIAL

Government of Karnataka

Rs. 100

e-Stamp

Certificate No. : IN-KA64144573299801U

Certificate Issued Date : 11-Mar-2022 07:12 PM

Account Reference : NONACC (FI)/ kagcs108/ GOWRIBIDANUR/ KA-CK

Unique Doc. Reference : SUBIN-KAKAGCSL0863153401772414U

Purchased by : REVA UNIVERSITY

Description of Document : Article 37 Note or Memorandum

Description : MEMORANDUM OF UNDERSTANDING

Consideration Price (Rs.) : 0 (Zero)

First Party : REVA UNIVERSITY

Second Party : SOLAR ENERGY SOCIETY OF INDIA

Stamp Duty Paid By : REVA UNIVERSITY

Stamp Duty Amount(Rs.) : 100 (One Hundred only)

Statutory Alert:

1. The authenticity of this Stamp certificate should be verified at 'www.shcllstamp.com' or using e-Stamp Mobile App of Stock Holding. Any discrepancy in the details on this Certificate and as available on the website / Mobile App renders it invalid.
2. The onus of checking the legitimacy is on the users of the certificate.
3. In case of any discrepancy please inform the Competent Authority.

MEMORANDUM OF UNDERSTANDING

This Memorandum of Understanding (hereinafter called as the 'MOU') is entered into on this the 16th Day of – March – Two Thousand and Twenty-One (18.03.2022), by and between the following two entities collectively referred to as “Parties” and each referred to individually as “Party”.

(a) REVA University, Bangalore, Karnataka, the First Party represented herein by its Vice Chancellor, Dr. M Dhananjaya (hereinafter referred as ‘First Party’, the institution which expression, unless excluded by or repugnant to the subject or context shall include its successors-in- office, administrators and assigns).

Registrar
REVA University
Bengaluru - 560 064

Smt *Dr. M Dhananjaya*



And

(b) Solar Energy Society of India (SESI), with its Registered Office at 2nd Floor, Central Board of Irrigation and Power, Malcha Marg, Chanakyapuri, New Delhi, Delhi 110021, which expression, unless otherwise repugnant to the context and meaning thereof, shall mean and include its successors and assign and represented by its authorized representative, of the second party.

1. Modalities of Creating the Centre of Excellence

- [1]. The Centre shall be Named as "**Centre of Excellence in Renewable Energy and Data Analytics**"
- [2]. The CoE would be developed on a PPP model that brings in autonomous functioning of the centres with the joint dynamism and technology strengths of the private sector and public institutes with the best of the talents of the country. The CoE would be maintained at prevailing world standard in its action and state. The CoE will be run under the control of REVA University, Bengaluru.
- [3]. The infrastructure for the Centre of Excellence would be initially provided by the respective institutes and the beneficiaries.
- [4]. For a healthy and coordinated growth of the renewable sector, it is essential that the research out come all the centre be shared among the centres of Renewable energy.

2. Major Activity of CoE

- [1]. Create world class human capital in the emerging and continuously evolving Solar Energy domain through state of the art training and development mechanism. Post graduate research and Ph.D program may be initiated.
- [2]. Revive and Promote Applied Research and Development to adapt and sustain emerging and futuristic technologies in India and Emerging Market Context.
- [3]. Development of India Specific Solutions for rural and urban applications derived from multiple technologies shall be carried out. International collaboration with premier institutions and R&D centres shall be pursued.
- [4]. Identifying and capturing best in class practices across countries, knowledge creation & Sharing.
- [5]. Additional research and Project activity shall be taken up on need basis from industry and other organizations with additional budgetary provision as per the rules of REVA University, Bengaluru

3. Organisation of CoE

There shall be One Tier organisational structure for functioning of Centre of Excellence comprising of the following Member(s)

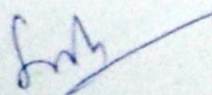
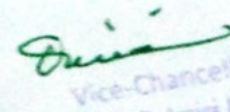
Sr. No.	Name and Organisation	Remarks
1.	Member-1 Solar Energy Society of India	On Nomination Basis
2.	Member-2 Solar Energy Society of India	On Nomination Basis
3.	Member-3 SoEEE, REVA University	Vice Chancellor, REVA University
4.	Member-4 REVA University	Dean R&I, REVA University
5.	Member-5 SoEEE, REVA University	Director, SoEEE
6.	Member-6 Professor/Associate Professor	On Nomination Basis
7.	Member-6 Central Govt. Agencies	On Nomination Basis
8.	Member-7 Central PSU	On Nomination Basis
8.	Member-8 Private Energy Service Sector	On Nomination Basis

4. Duration/Term of MoU

This MoU shall be valid for Ten Years from the Date of its entering into and may be mutually extended from time to time in writing by the parties.

5. Termination

The centre on Majority agreement may recommended the termination of the MoU after serving 3 months' notice or till end of academic year.

Vice-Chancellor
REVA University, Rukmani Knowledge Park
Attimbenahalli, Yelahanka, Bengaluru - 560074
Registrar
REVA University
Bengaluru - 560 064

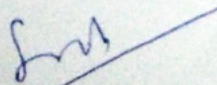
6. Key Research Areas

Key research areas will mainly include Energy Education, Research, and Technology Development & Consultancy. However the centre will also focus on the following thrust areas

Solar photovoltaics | Solar Thermal | Concentrated Solar Power | Solar PV power generation | Micro Grid | Smart grid Power | Wind | Wind resource Assessment | Solar Wind based hybrid Systems | Energy Storage Systems Pump Hydro | Battery research: Electrical Vehicle applications | Geothermal | Passive Solar Building Technology | Thermal comfort | Net-zero Energy Buildings | Green Building Rating, Policies | Ocean | Tidal | Fuel Cells | Bio-Energy | Bio-fuels | Hydrogen Energy | Energy & Environment related research & Policy Issues | Artificial Intelligence: Machine learning Applications for Renewable Energy | Smart Grid | Energy Management Systems | Renewable Energy Source assessment, Integration | Energy Storage Systems | Electrical Grid | Stability | Renewable Power Penetration in Grid | etc,

7. Other Terms of the MoU

- [1]. No party shall publish or deliver to the press any information related to the Projects without intimation to the institute. REVA University, project Participants shall take responsibility that confidentiality clause as mentioned here under is not violated while submitting any information for publication in form of thesis, papers or presentations etc.
- [2]. REVA University will be free to publish research results out of this centre that does not contain Proprietary Information.
- [3]. Any divergence or difference derived from the interpretation or application of the MoU shall be resolved by arbitration between the parties as per the Arbitration Act, 1996. The place of the arbitration shall be at District Head Quarters of the First Party. This undertaking is to be construed in accordance with Indian Law with exclusive jurisdiction in the Courts of Bangalore
- [4]. No changes can be made to this MoU without written consent and duly signed by all the parties. Addition, deletion and/or alteration to this MoU may be effected with the written agreement of all the parties to this MoU concerning the changes.




Vice-Chancellor
REVA University, Rukmini Knowledge Park
Attigenahalli, Yelahanka, Bengaluru - 560 064
Registrar
REVA University
Bengaluru - 560 064

IN WITNESS WHERE OF PARTIES HERETO HAVE ENTERED INTO THIS AGREEMENT EFFECTIVE AS ON THE DATE AND YEAR FIRST WRITTEN ABOVE

Signed and Delivered for:

REVA University, Bengaluru

M Dhananjaya
Signature:

Name: M Dhananjaya
Title: Vice Chancellor,
REVA University

Witness:

DVS Bhaqa Vanulu
(Name & Designation)

DVS BHAGAVANULU
DEAN - DEAN, ACADEMICS.

(Name & Designation)

Internal Quality Assurance Cell (IQAC)
REVA University
Mini Knowledge Park, Kattigenahalli,
Yelahanka, Bengaluru - 560 064.

Solar Energy Society of India

Signature: *SMA*
16/3/2022

Dr. S.M Ali
Title: Vice President (SESI)

School of EEE

del
Signature: 16/3/2022

Dr. Raghu C N
Title: Dy. Director, SoEEE

Witness:



B.P. Divakar
S. Divakar
(Name & Designation)

DR. KARTHIK RAJENDRA
DEPUTY DIRECTOR (RQ I)

[Signature]
16/3/2022
(Name & Designation)

Dr. Ritesh Dash. *[Signature]*
Asso. Prof., SoEEE 16/03/22



सत्यमेव जयते

INDIA NON JUDICIAL

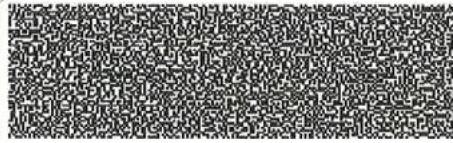
Government of Karnataka

Rs. 100

e-Stamp

Certificate No. : IN-KA44886366197816U
Certificate Issued Date : 21-Feb-2022 05:22 PM
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Purchased by : REVA UNIVERSITY
Description of Document : Article 12 Bond
Description : M O U
Consideration Price (Rs.) : 0
(Zero)
First Party : SWIFTERZ CREATIVE SERVICES LLP
Second Party : REVA UNIVERSITY
Stamp Duty Paid By : REVA UNIVERSITY
Stamp Duty Amount(Rs.) : 100
(One Hundred only)

सत्यमेव जयते



Please write or type below this line

Memorandum of Understanding

1. This MOU is made between “SWIFTERZ ACADEMY” a part of SWIFTERZ PLATFORM owned by SWIFTERZ CREATIVE SERVICES (LLP) Head quartered at Coimbatore, Tamil Nadu and having its regional office in Bengaluru, Karnataka. (Here in after referred as the first party and REVA University, Bengaluru (Here in after referred as the second party).

Page 1 of 5

Statutory Alert:

1. The authenticity of the Stamp certificate should be verified at www.e-stamp.com using e-Stamp Mobile App or Stock Holding.
2. In case of discrepancy in the details on this Certificate and as available on the website / Mobile App, kindly inform the Registrar.
3. In case of any discrepancy please inform the Computer Authority.


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Bengaluru - 560 064

2. The First Party is an AEC PLATFORM exclusively created for the AEC Domain to improvise the Industry Standards and function as Virtual Training & Placement Cell for Academia.
3. The second party is a Recognized as one of the Top 50 private universities in India, with innovative pedagogy, exemplary infrastructure, and an industry-resilient curriculum that is designed for the future job market, strives to benchmark new milestones in modern education.
4. For the benefit of students and faculty both the parties join hands. With this MoU the first party will impart training, providing internship opportunities and assist in providing job opportunities for students and conduct Faculty development programmes for Faculty of the second party for upgrading knowledge.
5. The first party will give discount on fees to each student of second party under this MOU. The fee structure will be taken as prevailing time to time per course being conducted by the first party.

Services accessed by first party in signing this MOU:

A. WORKSHOPS & WEBINARS: Technical Workshops and Webinars from various Industry Experts from Swifterz (First Party) and its allied companies which will be organized and sponsored by the First Party.

B. INTERNSHIP: Eligible candidate's from 2nd, 3rd & 4th year of core engineering departments will be provided Paid Internship opportunity in the various fields of AEC Industry based on their skills and Knowledge.

The First party also might identify Internship opportunity with its allied and partnered companies in the Platform.

C. TRAINING: Professional and practical training from first party and its allied partners to enhance the practical knowledge in various vertical of AEC industry will be organized at a subsidiary cost or sponsored. Also, first party will sponsor 100% free trainings for the class topper every year from Civil, Mechanical and Electrical schools form second party. Placement Training on Mock Interview Tests, Soft Skills, and Presentation Skills will be sponsored by the first party.

D. INFRASTRUCTURE: From second party there is no direct commercials involved, but if necessary, they have to allocate their own hardware and laboratories. Required Software's will be sponsored by first party and its allied OEM companies for learning, Research and Service. Read Annexure 1.

E. FDP PROGRAM: First Party will invest for 2 FDP Programs annually for Civil, Mechanical, Electrical, Architecture Department faculties. Faculty members will be trained on software's and applications used in the AEC Industry.

TERMINATION:

This MoU shall take effect immediately on the execution of these:

Any notice request or other communication required or permitted to be given or made under this agreement to the first party or second party shall be in writing. Such notice or request shall have been given or made when it shall have been delivered by hand, airmail with a copy by facsimile, to the party to which it is addressed at such party's address specified below or at such other address as such party shall have designed by notice to the party for giving such notice or making such request.

6. The parties hereto acting themselves or through representatives duly authorized, have caused this MoU to be signed in their respective names as of the day & year written above.

On behalf of SWIFTERZ CREATIVE SERVICES (LLP). Signed by	On behalf of REVA University Signed by
CEO 	 Dr. M. Dhanamjaya Vice-Chancellor
 Director - Admin	 Registrar REVA University


Witness - 1


SWIFTERZ CREATIVE SERVICES (LLP)



Date: 22.02.2022.

Witness - 2


Dr. Y. Ramalinga Reddy
Director,
School of Civil Engg.



Annexure 1 - INFRASTRUCTURE

INFRASTRUCTURE		
Sl. No	Description	Qty
1	Computers: Minimum Configuration of i5 (i5-2320) Processor, 4 GB RAM, 500 GB SSD HDD with Monitor and other peripherals.	30 Nos.
2	Standalone Network Setup for the 30 computers.	General Standards
3	Internet Facility	With Good Bandwidth



MEMORANDUM OF UNDERSTANDING

BETWEEN

REVA UNIVERSITY (BENGALURU, INDIA)

AND

AI TECH PARK SDN. BHD. (PENANG, MALAYSIA)

In this Memorandum of Understanding (hereinafter referred to as "MOU") REVA University and AI Tech Park Sdn Bhd (hereinafter referred to as the "Parties" or singularly as "Party"), wishing to encourage and facilitate international education opportunities for their students and faculty members, and seeking to promote the process of internationalization at their respective institutions, declare their mutual interest in exploring co-operation as follows on the basis of equality and reciprocity of benefits:

1. Co-operation

- a) Both Parties are united by common interests and objectives, and they shall establish channels of communication and co-operation that will promote and advance their respective operations within the Institution and its related wings. The Parties shall keep each other informed of potential opportunities and shall share all information that may be relevant to secure additional opportunities for one another.
- b) Both Parties co-operation will facilitate effective utilization of the Intellectual capabilities of the faculty of First Party providing significant inputs to them in developing suitable teaching / training systems, keeping in mind the needs of the industry, the Second Party.
- c) The general terms of co-operation shall be governed by this MOU. The Parties shall cooperate with each other and shall, as promptly as is reasonably practical, enter into all relevant agreements, deeds, and documents (the 'Definitive Documents') as may be required to give effect to the actions contemplated in terms of this MOU. The term of Definitive Documents shall be mutually decided between the Parties. Along with the Definitive Documents, this MOU shall represent the entire understanding as to the subject matter hereof and shall supersede any prior understanding between the Parties on the subject matter hereof.



Page 1 of 3


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Bengaluru - 560 064



2. The Parties wish to collaborate in generating ideas, acquiring talent, building, and refining a process for AI productization, and establishing a marketplace for buyer/seller interaction for intellectual property, provide online – offline short- & long-term courses, train students industry guided coaching on our research and development works between AI Tech Park Sdn. Bhd. ("ATP") and REVA University ("RU"), respectively.
3. Areas of potential cooperation between the Parties include but are not limited to:
 - a) Joint development of academic projects for the benefit of both institutions
 - b) Student International Internship Programs
 - c) Organizing joint workshops, hackathons, and certification courses
 - d) Conducting Online Guest Lectures and Webinars
 - e) Developing Training Content and Delivering training
 - f) Joint Research Projects
 - g) IP Creation, Product Development, and Commercialisation
 - h) Collaborative Research and Development
 - i) Faculty Development Programs
4. Any actual collaboration in a particular area shall be negotiated in an agreement between the Parties completely separate from this MOU.
5. Each engagement will define intellectual property ownership explicitly on case top case basis for both the parties..
6. Under this MOU, and in any collaboration arising from this MOU, neither Party will incur any financial obligations resulting from the actions of the other Party without a prior agreement in writing, completely separate from this MOU, to accept specific financial obligations. It is understood by the Parties that any agreement pertaining to financial matters will be conditional upon the availability of funds for each Party.
7. This MOU will be in effect from the latest date of signature and shall continue thereafter from year to year until such time as
 - a) both Parties agree in writing to terminate it; or
 - b) either Party gives at least (6) months written notice of termination to the other Party.
8. While in effect this MOU may be amended at any time by mutual written consent of the Parties.




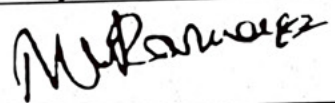


Page 2 of 3


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Bengaluru - 560 064



9. This MOU is not binding on the Parties and contains no enforceable legal obligations.

The following signatures are affixed as acknowledgement and notification of the terms of this MOU:

For REVA University, Bengaluru, INDIA	For AI Tech Park Sdn. Bhd. Penang, Malaysia
 <hr/> <p>Dr. Dhanumjaya Madiraju Vice-Chancellor</p> <hr/> <p>Date:</p>	 <hr/> <p>Dr. Venkata Ramana Maram: Founder & CEO</p> <hr/> <p>Date: 1/1/2022</p>
 <hr/> <p>Dr. Ramesh N. Registrar</p> <hr/> <p>Date: 01.01.2022</p>	 <hr/> <p>Ms. M. Sandhya Rani Program Manager, AI Tech Park Sdn.Bhd.</p> <hr/> <p>Date: 1/1/2022</p>





AI Tech Park Sdn.Bhd (1352319-U)

MUTUAL NON-DISCLOSURE AGREEMENT

Purpose: Describe the purpose for the exchange of information

THIS MUTUAL NONDISCLOSURE AGREEMENT (this "Agreement") is dated and is entered into by between ("AI Tech Park, whose business address is 33-07-31 @ Lilitan Sungai Ara , Pansapuri Idaman Iris, Bayan Lepas, 11900, Penang, Malaysia ("ATP") and School of CSE and CIT, REVA University whose business address is Rukmini Knowledge Park, Kattigenahalli, Bangalore 560064.

Either Party may be "Receiving Party" or "Disclosing Party".

Any reference to a Party includes their respective employees, officers, directors, contractors, agents and advisors (including without limitation, counsel, consultants and accountants), as applicable (collectively, "Representatives").

Confidentiality.

Each Party is willing to furnish the other party and/or its Representatives with certain information which is non-public, confidential, or proprietary in nature.

"Confidential Information" means any oral, written, graphic, electronic or other information, in whole or in part, whether furnished prior to, on or after the date hereof, together with:

- Ideas, analyses, compilations, studies or other documents prepared by the Disclosing Party;
- any metadata, source code, object code, firmware or other data or information embedded in, or attached to, electronic documents or other media provided by the Disclosing party;
- any marketing strategies, plans, financial information or projections, operations, sales estimates, business plans and performance results relating to the past, present and future business activities of the Disclosing Party;
- plans for products or services, customer or supplier lists; and
- any other information that should reasonably be recognised as confidential information of the Disclosing Party.

Each party agrees to safeguard Confidential Information received under this Agreement with at least the same degree of care as it formally uses to protect its own similar Confidential Information.

2. Exclusions.

Confidential Information does not include information that:

- is or becomes generally available to the public other than as a result of direct or indirect disclosure in breach of this Agreement by the Receiving Party or any of its Representatives.
- is or becomes available to the Receiving Party on a non-confidential basis from a source other than the Disclosing Party or its Representatives who is not known by the Receiving Party to be bound by a confidentiality agreement

with the Disclosing Party or by any other legal or fiduciary obligation of secrecy to, or for the benefit of, the disclosing party;

- was known by the Receiving Party or in its possession on a non-confidential basis prior to the date of disclosure by or on behalf of the Disclosing party;
- was or is independently developed by the Receiving Party or any of its Representatives without use of, or reference to, Confidential Information, as demonstrated by tangible evidence; or
- is furnished by the Disclosing Party with a written confirmation that such information is not Confidential Information and may be disclosed.

3. Restriction in Use/Access.

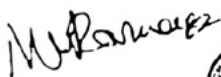
Subject to Section 7 of this Agreement and unless otherwise agreed to in writing by the Disclosing Party:

- the Receiving party and its Representatives agree to keep Confidential Information strictly confidential and will only use Confidential Information in connection with this Agreement and will not disclose Confidential Information to anyone; and
- the Receiving Party agrees not to disclose to any person (other than its Representatives) and shall not permit any of its Representatives to disclose to any person:
 - the existence or contents of this Agreement;
 - the fact that Confidential Information has been made available to the Receiving Party or its Representatives pursuant to this Agreement or that the Receiving Party is evaluating such Confidential Information; or
 - any term, condition or other fact relating to discussions or negotiations between the Parties.

The Receiving Party agrees to permit access to the Confidential Information only to its Representatives who the Receiving Party determines need to know the Confidential Information for the purposes contemplated by this Agreement and who shall be subject to a confidentiality or professional obligation, duty or agreement, code of conduct or confidentiality undertaking that is at least as restrictive as the provisions of this Agreement from a confidentiality perspective. Should the Receiving Party have reason to believe that any Confidential Information has been disclosed to a person not authorized to receive such information, the Receiving Party shall inform the Disclosing Party in writing as promptly as practicable. Under such circumstances, the Receiving Party shall use commercially reasonable efforts to limit any damage that may be caused to the Disclosing Party as a result of the disclosure. The Receiving Party also agrees to promptly notify the Disclosing Party in writing of any breach by it or its Representatives of this Agreement of which the Receiving Party becomes aware, and in any event, the Receiving Party shall be responsible for any breach of this Agreement by any of its Representatives.

4. No License.

Each party agrees that Confidential Information provided by or on behalf of the Disclosing Party shall at all times remain the exclusive property of the Disclosing Party. Neither party is granting a license to the other party to use any of the Disclosing Party's Confidential Information or intellectual property, except as may be




AI Tech Park Sdn. Bhd.
1352319-U

Contact Us: ram@aitchpark.com
H/P: +60174723528

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REVA University
Bengaluru - 560 064

specifically required for the purpose of this Agreement, and then only for such purpose.

5. Reverse Engineering.

The Receiving Party agrees not to, and not to attempt to (and will not permit its Representatives to), reverse engineer or decompile any software, hardware, firmware or other technology programs provided to it by or on behalf of the Disclosing Party under this Agreement, unless it has obtained the Disclosing Party's prior written consent.

6. Return/Destruction.

Upon the Disclosing Party's written request, the Receiving Party agrees to promptly use commercially reasonable efforts to return or destroy the Confidential Information and any copies or extracts thereof in its possession or in the possession of its Representatives. The Receiving Party and its Representatives may retain any Confidential Information that:

- it is required to keep for compliance purposes under a document retention policy or as required by a court or regulatory agency or by applicable law, rules, regulations or professional standards;
- (b) consists of analyses, compilations, studies or other documents prepared by the Receiving Party or its Representatives; or
- (c) have been created electronically pursuant to automatic or ordinary course archiving, back-up, security or disaster recovery systems or procedures.

If the Receiving Party elects to destroy Confidential Information (subject to any retention rights provided in this Agreement), the Disclosing Party may request that the Receiving Party provide it with written confirmation of destruction in compliance with this paragraph. Each party agrees to promptly inform the other party in writing if it believes that it erroneously or unintentionally disclosed Confidential Information to the other party, and in any such instance, the Receiving Party will dispose of or return such Confidential Information as instructed by the Disclosing Party.

7. Disclosure Legally Compelled or Required.

● the event that the Receiving Party or any of its Representatives becomes legally compelled, required or requested by a court of competent jurisdiction or otherwise by law, regulation or legal or judicial process or upon the bona fide request or demand of a regulatory agency or stock exchange that has authority over the Receiving Party or any of its Representatives to disclose any Confidential Information, the Receiving Party will provide the Disclosing Party with prompt written notice, unless providing such notice would violate applicable law or regulation, so that the Disclosing Party may seek a protective order or other appropriate remedy, waive compliance with the provisions of this Agreement or consent to such disclosure. If the Disclosing Party seeks such an order or other appropriate remedy, the Receiving Party will provide such cooperation as the Disclosing Party reasonably requests. The Receiving Party (or its Representatives, as applicable) agrees to furnish, disclose or describe only that portion of the Confidential Information which is legally required (based on the advice of its internal or external counsel).

8. Remedies.

Each party acknowledges and agrees that in the event of any breach of this Agreement by a party or its Representatives, the non-breaching party or its Representatives may be irreparably and

immediately harmed and might not be made whole by monetary damages. The non-breaching party or its Representatives may be entitled to equitable relief by way of injunction, specific performance or otherwise in addition to any other remedies that may be available to it.

9. Competitive Development.

Each party recognizes that the other party may be engaged in the research, development, production, marketing, licensing and/or sale of similar services or products that may be competitive with each other and may display the same or similar functionality. Nothing in this Agreement shall be construed to prevent either party from engaging independently in such activities, provided it does not use the Confidential Information of the other in order to do so.

10. No Representations.

NEITHER PARTY NOR ITS REPRESENTATIVES HAVE MADE OR MAKE ANY EXPRESS OR IMPLIED REPRESENTATION OR WARRANTY IN THIS AGREEMENT AS TO THE ACCURACY OR COMPLETENESS OF THE CONFIDENTIAL INFORMATION AND NONE OF THEM SHALL HAVE ANY LIABILITY OR OTHERWISE UNDER THIS AGREEMENT TO THE OTHER PARTY, ANY OF ITS REPRESENTATIVES OR ANY OTHER PERSON RELATING TO OR RESULTING FROM USE OF THE CONFIDENTIAL INFORMATION OR FOR ANY ERRORS THEREIN OR OMISSIONS THEREFROM (EXCEPT AS MAY OTHERWISE BE PROVIDED IN A DEFINITIVE AGREEMENT SIGNED BY THE PARTIES ON OR AFTER THE DATE OF THIS AGREEMENT).

11. No Future Commitment or Obligation.

This Agreement does not give rise to any future intention, commitment or obligation of either party to buy or sell or to enter into any kind of business relationship with the other party.

12. Choice of Law.

This Agreement will be governed by and construed under the laws of Malaysia, without regard to the principles of choice of law.

13. Entire Agreement.


This Agreement represents the entire understanding and agreement of the parties regarding the subject matter of this Agreement and supersedes all prior agreements and understandings relating to the subject matter of this Agreement. This Agreement may not be modified or amended, except by a written document duly executed by both parties.

14. Assignment.

Neither party may assign this Agreement without the prior written consent of the other party (which shall not be unreasonably withheld or delayed).

15. Term of Confidentiality.

Confidential Information disclosed pursuant to this Agreement shall be subject to the terms of this Agreement for five (5) years following the initial date of disclosure (which may be prior to the date of execution of this Agreement), except that Confidential Information that constitutes trade secrets of the Disclosing Party shall be subject to the terms of this Agreement for as long as such information remains a trade secret under applicable law and Confidential Information that constitutes personally identifiable information shall be subject to the terms of this Agreement forever, without expiration.

M. Ramani


AI Tech Park Sdn. Bhd.
1352319-U

Contact Us: ram@aitechpark.com
H/P: +60174723528

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Sp. Ramani

Registrar
REVA University
Bengaluru - 560 064

AI Tech Park Sdn.Bhd (1352319-U)

16. Severability.

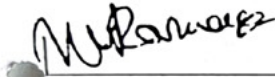
If any provision of this Agreement is determined to be invalid or unenforceable, it will not affect the validity or enforceability of the other provisions of this Agreement, which shall remain in full force and effect. Provided, however, if application of this clause materially and adversely results in failure of this Agreement to achieve its essential purpose, the party adversely impacted may terminate this Agreement upon notice to the other party.

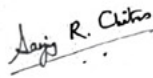
17. No Waiver.

The parties have signed this Mutual Nondisclosure Agreement as of the date first written above.

AI Tech Park Sdn.Bhd

School of CSE and School of CIT, REVA University





Signature

Name Dr. Maram Venkata Ramana

Name Dr. Sanjay Chitnis

Title Founder and CEO

Dean, Computer Science





MEMORANDUM OF UNDERSTANDING

THIS MEMORANDUM OF UNDERSTANDING (hereafter referred to as “MOU”) is made on this day of January 2022

BY AND BETWEEN

Outleap Technologies (Leap Scholar and Leap Finance) is a wholly-owned subsidiary of Outleap Technology Pvt Ltd, which is started in 2019 and provides higher education services abroad. **Outleap Technologies Pvt Ltd** has its Registered office presence at 163/A 9th Main Rd, Sector 6, HSR Layout, Bangalore 560102, Karnataka (hereinafter referred to as “Leap Scholar and Leap Finance” which expression shall mean & include unless repugnant to the context or meaning thereof, its successors & permitted assigns) of the other part.

AND

REVA University, Bangalore represented by **School of Computer Science and Engineering**, having its registered office at, Rukmini Knowledge Park, Kattigenahalli, SH 104, Srinivasa Nagar, Bengaluru, Karnataka 560064

Outleap Technologies (Leap Scholar and Leap Finance) Bangalore & REVA University (School of Computer Science and Engineering), Bangalore are hereafter referred to individually as “Party” and collectively as “Parties”.

PREAMBLE Leap Scholar helps international students gain admission to various Educational institutions in the main English-speaking countries through its various offices and offers Services that include personalized course advice, course application submission, and pre-departure guidance.

REVA University school of Computer Science and Engineering is a private state University. The University currently offers 49 Undergraduate Programmes, 28 full-time Postgraduate Programmes, 2 part-time Postgraduate Programmes, Ph.D. Programmes in various disciplines and several Certificate/Diploma and Postgraduate Diploma Programmes in Engineering & Technology, Architecture, Science and Technology, Commerce, Management Studies, Law, Arts, Humanities & Social Sciences, and Performing Arts & Indic Studies.



WHEREAS REVA University School of Computer Science and Engineering, Bangalore has shown readiness to collaborate with **Leap Scholar** for promoting the overseas studies & to provide required infrastructure & facilities for running & conducting the Seminars/Events from time to time throughout in an academic year as and when required.

NOW THEREFORE in consideration of the foregoing & mutual covenants and promises contained herein, the Parties agree as follows:

1. It is agreed between the parties **Outleap Technologies (Leap Scholar and Leap Finance)&REVA University shall work together on a non-exclusive basis** for the purpose mentioned above.
2. The role & responsibilities of each party will be as under:

Role & Responsibilities of Leap Scholar:

- Conducting education fair once or twice a year where US, UK, Canada, and Australian Universities representatives will participate subject to their availability
- Conducting various Seminars pertaining to the advantages of Overseas Studies
- Inviting **REVA University students** to education fairs and events at Leap
- Guest talks by eminent professors and scholars from international universities we are partnered with
- Conducting free Workshop on IELTS, GRE, GMAT, SOP Writing will be conducted for all Study abroad aspirants
- Conducting free long-term courses on IELTS (Batches)
- Conducting initiatives around Leap Scholarship (Helping students for better access to higher studies)
- Conducting informative seminars on financing for higher education
- Helping students with visa application, loan application, and bank account (If in the US)

Role & Responsibilities of REVA University, Bangalore:

- Allow students of **REVA University** to attend the various events/ Seminar conducted by **Outleap Technologies (Leap Scholar and Leap Finance)** Bangalore.
- Recommend services of Leap Scholar to their students planning their studies abroad.
- To provide required infrastructure & facilities like:
- Permission to post Leap Scholar event posters in college & hostel areas.



- Permission for using classroom/Seminar Hall (typically 1-2 times a year during post-college hours for conducting Events/ Seminar/ one-to-one session).
- LCD Projector (if possible), Auditorium, Tables & Chairs.
- To provide permission to Leap for putting up informative and promotional collateral in the college
- To provide spaces in computer labs in order to conduct long term batches for IELTS

Term of MOU:

This MOU comes into force from the day of signing by the last party. The term of this MOU is three (3) years from the last party signing hereof. Either party may terminate this MOU by giving thirty (30) days prior written notice to the other party.

Relationship Between the Parties

This MOU does not deem to establish a permanent relationship between the parties except to the terms of this contract.

Also, this MOU is non-commercial in nature and entered between the said parties purely for Academic purposes benefitting the students as designated by **REVA University, Bangalore**. It is mutually agreed between both the parties that they will not charge the students any form of fees, service charges, etc. for offering their services and support to the students.



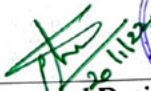

Limitation of liability: Neither party shall be liable for any special, indirect, incidental, punitive, contingent nor consequential loss or damages suffered out of or in connection with the aforesaid MOU whether as a result of a breach of this MOU or otherwise.

Dispute Resolution: The parties recognize that a bona fide dispute as to certain matters may from time to time arise during the term of this MOU, which relates to either Party's rights or obligations hereunder. In the event of the occurrence of such dispute, either Party may, by written notice to the other Party, have such dispute referred jointly to the authorized representatives of the Parties, or their successors or counterparts, for resolution by good faith negotiations within 15 days after such notice is received in respect of such dispute.



Any party will not sue any concerned or will be sued in any Court of Law for being unable to provide any of the activity, due to any unforeseen circumstances.

WITNESS WHEREOF, the Parties hereto, each acting under due & proper authority have executed this MOU as of the date written above

<p>FOR</p> <p>Outleap Technology Private Limited, 163/A 9th Main Rd, Sector 6, HSR Layout, Bangalore 560102, Karnataka</p>	<p>FOR</p> <p>REVA University School of Computer Science and Engineering, Rukmini Knowledge Park, Kattigenahalli, SH 104, Srinivasa Nagar, Bengaluru, Karnataka 560064</p>
<p>Signature / Stamp</p>  	<p>Signature / Stamp</p>  
<p>Name and Designation: Mr. Raghunath Thota Vice President - Outleap Technology Leap Scholar Private Limited, HSR Layout Bangalore.</p>	<p>Name and Designation: Dr. Ashwinkumar U M (Professor and Dy-Director) Rukmini Knowledge Park, Kattigenahalli, SH 104, Srinivasa Nagar, Bengaluru, Karnataka 560064</p>
<p>Date: 20 January 2022</p>	<p>Date: 20 January 2022</p>



सत्यमेव जयते

INDIA NON JUDICIAL

Government of Karnataka

e-Stamp

Certificate No. : IN-KA10280637680427T
Certificate Issued Date : 27-Apr-2021 12:21 PM
Account Reference : NONACC (FI)/ kacrsf108/ R T NAGAR/ KA-BA
Unique Doc. Reference : SUBIN-KAKACRSFL0890350095151037T
Purchased by : REVA UNIVERSITY
Description of Document : Article 37 Note or Memorandum
Description : MEMORANDUM OF UNDERSTANDING
Consideration Price (Rs.) : 0
(Zero)
First Party : REVA UNIVERSITY
Second Party : MOMSOON ACADEMY PVT LTD
Stamp Duty Paid By : REVA UNIVERSITY
Stamp Duty Amount(Rs.) : 100
(One Hundred only)

सत्यमेव जयते



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MEMORANDUM OF UNDERSTANDING

This Memorandum of Understanding (MoU) is made and executed at Bengaluru on 27th April, 2021 (27.04.2021) between:

Department of Biotechnology, School of Applied Sciences, REVA University, Bengaluru, having its registered office at Rukmini Knowledge Park, Kattigenahalli, Yelahanka, Bengaluru – 560 064 Karnataka, India (Herein referred to as Referred as “1st party”)

Page 1 of 8

Statutory Alert:

- 1 The authenticity of this Stamp certificate should be verified at 'www.shicrestamp.com' or using e-Stamp Mobile App of Stock Holding. Any discrepancy in the details on this Certificate and as available on the website / Mobile App renders it invalid.
- 2 The onus of checking the legitimacy is on the users of the certificate.
- 3 In case of any discrepancy please inform the Competent Authority.


Registrar
REVA University
Bengaluru - 560 064

AND

MOMSOON Academy Pvt. Ltd. (Momsoon Fertility and IVF center, having its registered office at Jayanagar 4th Block, Bengaluru - 560 011 Karnataka, India (Hereinafter referred to as “2nd party”))

PRELUDE:

REVA University (hereafter referred to as RU) has been established by the Act of Government of Karnataka as a REVA University Act, 2012 as a Private University and notified Karnataka State Gazette Notification No.80 SAMVYASHAE SHASANA 2012 Bengaluru dated 7th February 2013 and has been recognized by UGC as per section 2(A) of UGC Act. The University imparts education and offers programs and courses leading to Graduate, Post-graduate, PhD and such other Degrees, Diplomas and Certificates as provided in its objectives and functions. The campus is located at Rukmini Knowledge Park, Kattigenahalli, Yelahanka, Bengaluru - 560 064 has well-furnished infrastructure facilities for academic and research activities. The University always strives to maintain quality and high standards of education and promotes students to develop their overall personality to become good citizens in the country.

MOMSOON Academy, a Private Limited company, is conceived as a training center of excellence in the field of infertility and reproductive medicine. Its sister concern, MOMSOON Fertility & IVF Centre, having all the required license and permissions, is providing best quality infertility care with an international advisory panel and highly educated and experienced embryologists. It is well equipped with state-of-the-art laboratories and recent technologies at its disposal.

Both parties are desirous of collaboration to drive one year “**P.G. Diploma Program in Clinical Embryology and Assisted Reproductive Technology**” for postgraduates in Life Sciences and Medical graduates and other short term Certificate Courses attached in Annexure A.

The course content of this would be a combination of developmental biology, Genetics, Cell and Molecular Biology, Embryology and Clinical Technology. The theoretical aspects will be taught either in Department of Biotechnology, School of Applied Sciences, REVA University or at MOMSOON Academy based on the need and the hands-on practical exposure and skill development in IVF would be given in MOMSOON Academy. The students need to attend both institutes for training and are governed by the rules and guidelines of the University for Admission, attendance, examination, etc., The P.G. Diploma will be awarded by the REVA University.

The faculty of MOMSOON Academy will provide in depth knowledge and understanding of topics and issues related human embryology and clinical techniques.

The students will have to undergo the practical training at IVF training laboratories at MOMSOON Academy and submit a case study report to Department of Biotechnology, School of Applied Sciences, REVA University at the end of the training.

RESPONSIBILITIES OF THE FIRST PARTY (REVA UNIVERSITY):

1. Approval of course curriculum and structure of the courses
2. Marketing and advertisement of the courses along with other regular programs.
3. Process of admission to the courses.
4. Provide the following minimum infrastructural facilities as per the REVA University Norms if required.
5. Collecting of fees from the students for the programs.
6. Examination related process and declaration of result on time.
7. Awarding degree to candidates after completion of programs.

RESPONSIBILITIES OF THE SECOND PARTY (MOMSOON Academy Pvt. Ltd.):

The Second Party shall be undertaking the following responsibilities under this MOU:

1. Shall be responsible for marketing, advertisement and counselling of the courses in exclusive way.
2. Designing of program curriculum and schedule of program.
3. Appointment of best faculties/trainers for course as per the requirement of program and they will be employees of second party and first party shall not be responsible for any remuneration and other expenses of the faculties/trainers.
4. Update curriculum on timely basis.
5. Party will be responsible to set question paper for examinations and evaluation.
6. Party will be responsible to provide project work to candidates and ensure to complete and submit project on time.
7. Party will appoint person for counseling and admission.
8. Party will be responsible to run operation smoothly.
9. Party will be responsible to conduct interpersonal activities and mock interviews preparing for placements.
10. Party will be responsible to schedule and arrange in campus or off campus interviews concern with first party.
11. Party shall not collect any fee or fine from the students at any point of the time.

COMBINE OBLIGATIONS:

1. Both parties agree to admit Minimum number of students: 10 and Maximum students: 20 for the PG Diploma program.
2. Both the parties will stick to their roles and responsibilities.
3. Both the parties are responsible and take a decision mutually for any changes.
4. Without consent of any party, neither party will take its own decision which may lead miscommunication, harm reputation, deviation from goal or contaminate relations.
5. Shall fix the fee as per Annexure A attached and any modification of the same shall be discussed and decision will be in writing after mutual consent between both the parties.
6. Neither party will act which may break rules, regulations or any law India for time being force.
7. Both the parties will keep the transparency on their part.
8. None of the party will interfere in each other's operation, associations and any individual process.

REVENUE SHARING:

1. First party will collect the fees from the students and same will be shared between parties on the ratio of 40 % share (First party) and 60 % (Second party)
2. If payment is incomplete (in case of dropouts or any other situation) then also percent of share will be same out of total fee collected.
3. Person from MOMSOON Academy Pvt. Ltd. will be updated with about admission and payment details of the student periodically by REVA University.
4. Revenue sharing (based on the fee collected) between MOMSOON Academy Pvt. Ltd., and REVA University happens after completion of the admissions for each course and before the commencement of the classes (Provided 100% fee payment from all students enrolled for the program).

INDEMNITY

The second party hereby agrees jointly and severally to indemnify first party REVA University, Bengaluru, their representatives, administrators and properties from and against all action, demands, proceedings, prosecutions, attachments, and like arising out of its liabilities and all charges, taxes, etc. arising out of the second party representatives, administrators, properties and trainees.

LIABILITIES

The first party shall not however, be liable for:

- a) Any payments of claims by employees of the Second party.
- b) Discharging any financial commitments made by Second party.
- c) Any suit on account of demands for infringement of copyright and other laws by the Second party which have no nexus with the object of the MOU being entered into.

BREACH OF AGREEMENT

REVA University, Bengaluru (First Party) shall have the right to terminate the agreement with the Second party, in case the Second party either fails to provide the services successfully as mentioned in the agreement, or violates any of the clause mentioned in the MOU, or exploits the students of misuses the partnership with REVA University, Bengaluru, (First Party) in any way by giving 1Month notice. The second party in order to terminate shall give 3 Months prior notice for the same.

PERIOD OF VALIDITY

This agreement shall be initially valid for two years from the date of signing the agreement and to be renewed subsequently by mutual consent of both the parties if not automatically terminated at the end of two years.

ARBITRATION

Any dispute arising out of or in connection with this contract, including any question regarding its existence, validity or termination, shall be referred to and finally resolved by arbitration under the India Arbitration Rules, which Rules are deemed to be incorporated by reference into this clause.

1. The number of arbitrators shall be one.
2. The seat, of legal place, of arbitration shall be Bengaluru, Karnataka, India.
3. The language to be used in the arbitration shall be English.
4. The governing law of the contract shall be the substantive law of India.

Annexure A

Program 1: Post Graduate Diploma in Clinical Embryology and Assisted Reproductive Technology

Duration: One year (8 Months Classroom Training + 3 Months Project)

Eligibility:

- Post Graduate in Biological Sciences / Life Sciences (M.Sc./M.Tech/ME)
- Graduate in Medical Sciences (MBBS)
- Graduate in Dental Sciences (BDS)
- Graduate of Ayurveda (BAMS)
- Graduate of Homeopathy (BHMS)

Program 2: Diploma in Clinical Embryology and Assisted Reproductive Technology

Duration: Six months

Eligibility:

- Graduate in Biological Sciences / Life Sciences (B.Sc./B.Tech / BE)
- Graduate in Veterinary Sciences (BVSc)
- Graduate in Medical Sciences (MBBS)
- Graduate in Dental Sciences (BDS)
- Graduate of Ayurveda (BAMS)
- Graduate of Homeopathy (BHMS)
- Graduate of Unani Medicine (BUMS)

Program 3: Intensive Certificate Course in Clinical Embryology and Assisted Reproductive Technology

Duration: Three months

Eligibility:

- Graduate in Biological Sciences / Life Sciences (B.Sc /B.Tech / BE)
- Graduate in Veterinary Sciences (BVSc)
- Graduate in Medical Sciences (MBBS)
- Graduate in Dental Sciences (BDS)
- Graduate of Ayurveda (BAMS)
- Graduate of Homeopathy (BHMS)
- Graduate of Unani Medicine (BUMS)

Fee Details:

Description	Charges (in Rs)	Intake
Post Graduate Diploma (PGD) in Clinical Embryology and Assisted Reproductive Technology (CE & ART)	3,50,000/- Annum inclusive of GST	20 per batch (20 per year)
Intensive Certificate Course (ICC) in Clinical Embryology & Assisted Reproductive Technology (CE & ART)	1,50,000/- inclusive of GST	5 per batch (30 per year)
Diploma in Clinical Embryology & Assisted Reproductive Technology (Diploma in CE & ART)	2,25,000/- inclusive of GST	10 per batch (20 per year)

ASSIGNMENT OF THE AGREEMENT

The right and/or liabilities arising to any party to this agreement shall not be assigned except with the written consent of the other party and subject to such terms and conditions as may be mutually agreed upon.

This MoU signed subjects to approval of the respective academic / administrative bodies as attested to this deed on 27.04.2021.

For REVA University


Signature:

Name : **Dr. M Dhananjaya**
Designation : **Vice Chancellor**

Seal: Vice-Chancellor

REVA University, Rukmini Knowledge Park
..tigenahalli, Yelahanka, Bengaluru-560 064

For MOMSOON Academy Pvt. Ltd.


Signature:

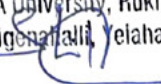
Name: **N. Ramakrishna**
Designation: **Director**

Seal:




WITNESS 1:

Director
School of Applied Sciences
REVA University, Rukmini Knowledge Park
Kattigenahalli, Yelahanka, Bengaluru - 64

Signature: 


Name: Prof. Shilpa BR
Designation: Deputy Director

WITNESS 1:


Signature:
Name: Niketa N
Designation: Director




WITNESS 2:

Signature: 
Name: Dr. Manjula KR
Designation: Associate Professor

Place: Bengaluru.

Date: 27.04.2021.

WITNESS 2:

Signature: 
Name: Raghu R
Designation: PRO

Place: Bengaluru.

Date: 27.04.2021.



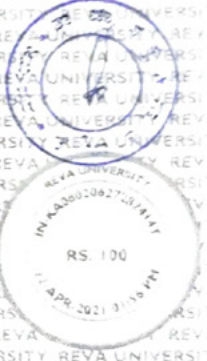




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Certificate No.	: IN-KA08020627282414T
Certificate Issued Date	: 22-Apr-2021 01:56 PM
Account Reference	: NONACC (FI) kacardb08 DODDABALAPURH KA-BP
Unique Doc Reference	: SUBIN-KAKACARD0886047233383035T
Purchased by	: REVA UNIVERSITY
Description of Document	: Article 12 Bond
Description	: M O U
Consideration Price (Rs.)	: 0 (Zero)
First Party	: REVA UNIVERSITY
Second Party	: XCYTON DIAGNOSTICS PVT LTD
Stamp Duty Paid By	: REVA UNIVERSITY
Stamp Duty Amount (Rs.)	: 100 (One Hundred only)

सत्यमेव जयते

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MEMORANDUM OF UNDERSTANDING

This Memorandum of Understanding (MoU) is made and executed at Bengaluru on 21st April, 2021 (21.04.2021) between

Department of Biotechnology, School of Applied Sciences, REVA University, Rukmini Knowledge Park, Kattigenahalli, Bengaluru - 560 064, Karnataka, India,

Statutory Alert:

1. The authenticity of this Stamp certificate should be verified at www.sholestamp.com or using e-Stamp Mobile App of Stock Holding Corporation of India.
2. Any discrepancy in the details on this Certificate and as available on the website / Mobile App renders it invalid.
3. The onus of checking the legitimacy is on the users of the certificate.
3. In case of any discrepancy please inform the Competent Authority.



AND

XCyton Diagnostics Pvt. Ltd., 4th Phase, No. 449, 10th Cross Rd, Shivapura, Peenya, Bengaluru
– 560 058, Karnataka, India .

PRELUDE :

REVA University (hereafter referred to as RU) has been established by the Act of Government of Karnataka as a REVA University Act, 2012 as a Private University and notified Karnataka State Gazettee Notification No. 80, SAMVYASHAE SHASANA 2012 Bengaluru dated 7th February 2013 and has been recognized by UGC as per section 2(A) of UGC Act. The University imparts education and offers programs and courses leading to Graduate, Post-Graduate, PhD and such other Degrees, Diplomas and Certificated as provided in its objectives and functions. The campus is located at Rukmini Knowledge Park, Kattigenahalli, Yelahanka, Bengaluru – 560 064 has well-furnished infrastructure facilities for academic and research activities. The University always strives to maintain quality and high standards of education and promotes students to develop their overall personality to become good citizens in the country.

XYCTON DIAGNOSTICS PRIVATE LIMITED, a company having PAN **AAACX0152B**, CIN **NO – U33112KA1993PTC014776**, incorporated under the laws of India with its [principal place of business and registered office located at **No. 449, 10th Cross, 4th Phase, Peenya Indl. Area, Bengaluru – 560 058** (hereinafter referred to as “**Second Party**” which term and expression shall mean and include its nominees and permitted assigns), of the **OTHER PART**.

PREAMBLE :

Memorandum of Understanding between **REVA University**, Rukmini Knowledge Park, Kattigenahalli, Yelahanka, Bengaluru – 560 064 and **XCyton Diagnostics Pvt. Ltd.**, (**XDPL**), **Peenya, Bengaluru – 560 058** represented by its undersigned of the one part and represented by its undersigned of the other part :

Where, **REVA University** and **XDPL**. Shall be hereinafter jointly referred to the parties and singularly as party.

The parties have decided to agree to establish academic and research collaborations in the areas of mutual interest and in accordance with terms and conditions set forth in this Memorandum of Understanding (MOU). Both the parties agree on the following activities:



ACADEMICS:

1. Exposing students for Medical Microbiology and Molecular Diagnostics skills with **XDPL** infrastructure.
2. Both the parties shall explore the possibilities of offering joint courses in the field of Medical Microbiology and Molecular Diagnostics of Life Science domain here after.
3. **XDPL** shall offer certificate training courses to students of REVA University at company's pilot lab in Bengaluru. The course modules to be offered would be as mentioned in Annexure A attached. (Minimum Number of students enrolled for module would be 5 and Maximum Number of students would be 15).
4. **XDPL** shall offer hands on training for students related to the domain of Medical Microbiology and Molecular Diagnostics of Life Science in the final (academic) year as per the course module.
5. The course structure and schedule will be determined from time to time as agreed by both parties.
6. The course fee for all modules will be handled through REVA University in a pre-determined manner.
7. **XDPL** shall allow REVA University students for industrial visit as per the convenience and company policy.
8. **XDPL** shall provide facility development programs to the academic faculty members from REVA University with mutual understanding as per company policy.
9. The course structure and schedule will be determined from time to time as agreed by both parties.
10. The course fee for all modules will be handled through REVA University in a pre-determined manner.
11. Both the parties shall mutually exchange any relevant information on teaching, research and scientific programs.
12. **XDPL** shall offer Academic/Research projects/Internships and training programs relevant to both parties.
13. Both the parties shall jointly organize seminars, conferences, or workshops on topics of mutual interest and to invite each other's Scientists/Faculty and Staff to participate therein.
14. **XDPL** shall assist REVA University for placement of students at relevant industries/organizations.

RESEARCH:

1. REVA University and XDPL shall promote active interaction among their staff and explore possibilities for undertaking commercial or government funded joint research and development projects.



2. Scientists, Research Scholars and PhD candidates of both the institutions will be encouraged to apply for sponsored or funded projects keeping in view the interests and philosophies of the respective institutions.
3. **XDPL** shall encourage and allow REVA University faculty members for product development in the field of life sciences with mutual consent.
4. **XDPL** shall allow Project students and research scholars of REVA University who wish to pursue a part of their research work to utilize the company's infrastructure for a nominal fee.
5. Both the parties shall get involved in consultancy activities concerned to commercial project and academic research for a nominal fee determined on case-by-case basis between both parties.

INTELLECTUAL PROPERTY RIGHT:

1. Any intellectual property jointly created by both parties, will be shared according to the intellectual and monetary contributions made by each party and the sharing will be governed by legal agreement entered into between the parties before initiation of every joint research program.

Whereas under this MoU signed by **RU** and **XDPL**, Bengaluru both the parties agreed to establish principles for collaboration and to develop mutually beneficial academic programs.

DURATION AND TERMINATION OF THE MOU:

This MoU will take effect from the date it is signed by representatives of the parties. It will remain valid for three years and may be continued after suitable review and agreement. If either party is found in violation of the above-mentioned terms or conditions of the MoU, the other party may terminate the MoU by giving written notice of two months in advance. Either Party may terminate this Agreement at any time for any reason by delivering 60 (sixty) days written notice of termination to the other Party without assigning any reason whatsoever. Once terminated, neither REVA University nor **XDPL** will be responsible for any losses, financial or otherwise, which the other party may suffer. In the event of termination of the agreement, the rights and obligations of the parties shall be settled by mutual discussions and consensus. However, obligations and commitments already contracted for and involving both parties shall be honored and continued by both parties until such commitments are completed.

ARBITRATION

Any disputes that arise between the parties shall be amicably resolved within Bengaluru City limits.



ASSIGNMENT OF THE AGREEMENT

The right and/or liabilities arising to any party to this agreement shall not be assigned except with the written consent of the other party and subject to such terms and conditions as may be mutually agreed upon.

This MOU signed subjects to approval of the respective academic/administrative bodies as attested to this deed on 21.04.2021.

SIGNED BY:



Vice Chancellor
REVA University,
Bengaluru.

Dr. M. Dhanamjaya
Vice Chancellor
REVA University
Rukmini Knowledge Park, Kattigenahalli
Yelahanka, Bengaluru - 560064



Witness: 1) Prof Shilpa B.R.
Deputy Director, SoAS
Director
School of Applied Sciences
REVA University, Rukmini Knowledge Park
Kattigenahalli, Yelahanka, Bengaluru - 560064

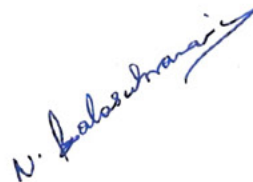


2) Dr. Veena. V.
Assistant Professor
Dept. of Biotechnology

SIGNED BY :

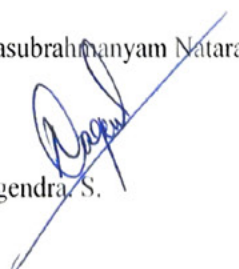


Dr. Latha P
Chief Operating Officer
X-Cyton Pvt. Ltd.,
Bengaluru.





Witness: 1) Dr. Balasubrahmanyam Natarajan

2) Dr. Nagendra. S.


Place : Bengaluru.
Date : 21.04.2021.



From: Dr. B.V.Ravikumar Managing Director XCyton Diagnostics Pvt.Ltd. no.449, 10 th cross 4 th phase Peenya Industrial Area Bangalore – 560 058. GST: 29AAACX0152B1Z5	To, The Assistant Director, Department of Biotechnology School of Applied Sciences REVA University, Kattigenahalli Yelahanka Bangaluru 560094
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LIST OF EXPERIMENTS	DURATION	NO. OF STUDENTS	UNIT PRICE	GST (@18%)	TOTAL PRICE
Laboratory safety: Fire, chemical, radiation, handling of biological specimens, waste, Disposal regulations, workplace hazardous. Specimen collection, identification, transport, delivery and preservation.	1 DAY	10	410	90	5000
Isolation of DNA and RNA followed by analysis through agarose gel electrophoresis - Estimation of DNA and RNA	3 DAYS	10	1025	225	12500
ELISA (Theory and practicals)	3 DAYS	10	1025	225	12500
TOTAL (Inclusive of taxes)					30000

For XCyton Diagnostics Pvt.Ltd.

Dr. B.V.Ravikumar
Managing Director



Dr. M. Dhanamjaya
Vice Chancellor
REVA University
Rukmini Knowledge Park, Kattigenahalli
Yelahanka, Bengaluru - 560064



XCyton Diagnostics Pvt. Ltd.

Registrar
REVA University
Bengaluru - 560 064



सत्यमेव जयते

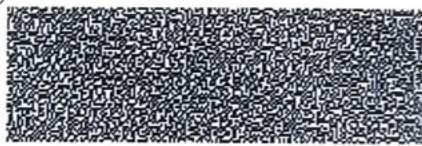
INDIA NON JUDICIAL

Government of Karnataka

e-Stamp

Certificate No. : IN-KA06758235533694T
Certificate Issued Date : 21-Apr-2021 11:32 AM
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Unique Doc. Reference : SUBIN-KAKACRSFL0883684198301251T
Purchased by : REVA UNIVERSITY
Description of Document : Article 37 Note or Memorandum
Description : MEMORANDUM OF UNDERSTANDING
Consideration Price (Rs.) : 0
(Zero)
First Party : REVA UNIVERSITY
Second Party : DR BIOSCIENCES LLP
Stamp Duty Paid By : REVA UNIVERSITY
Stamp Duty Amount(Rs.) : 100
(One Hundred only)

एचएसएन



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MEMORANDUM OF UNDERSTANDING

This Memorandum of Understanding (MoU) is made and executed at Bengaluru on 21st April, 2021 (21.04.2021) between:

Department of Biotechnology, School of Applied Sciences, REVA University, Rukmini Knowledge Park, Kattigenahalli, Bengaluru - 56 064, Karnataka, India.

Page 1 of 5

Statutory Alert:

1. The authenticity of this Stamp certificate should be verified at 'www.shreestamp.com' or using e-Stamp Mobile App of Stock Holding. Any discrepancy in the details on this Certificate and as available on the website / Mobile App renders it invalid.
2. The onus of checking the legitimacy is on the users of the certificate.
3. In case of any discrepancy please inform the Competent Authority.


Registrar
REVA University
Bengaluru - 560 064

AND

DR BioSciences LLP., #17, KK Chambers, 1st Floor, Behind Panchayat Office, Ganganagar, Bettahalasuru, Bengaluru – 562 157, Karnataka, India.

PRELUDE:

REVA University (hereafter referred to as RU) has been established by the Act of Government of Karnataka as a REVA University Act, 2012 as a Private University and notified Karnataka State Gazettee notification No.80 SAMVYASHAE SHASANA 2012 Bengaluru dated 7th February 2013 and has been recognized by UGC as per section 2(A) of UGC Act. The University imparts education and offers programs and courses leading to Graduate, Post- graduate, PhD and such other Degrees, Diplomas and Certificated as provided in its objectives and functions. The campus is located at Rukmini Knowledge Park, Kattigenahalli, Yelahanka, Bengaluru – 560 064 has well-furnished infrastructure facilities for academic and research activities. The University always strives to maintain quality and high standards of education and promotes students to develop their overall personality to become good citizens in the country.

DR Biosciences LLP., #17, KK Chambers, 1st Floor, Ganganagar, Bettahalasuru, Bengaluru – 562 157, Karnataka, India, (hereinafter referred to as “Second Party” which term and expression shall mean and include its nominees and permitted assigns), of the OTHER PART.

PREAMBLE:

Memorandum of Understanding between **REVA University**, Rukmini Knowledge Park, Kattigenahalli, Bengaluru – 560 064 and **DR Biosciences LLP., Ganganagar, Bettahalasuru, Bengaluru – 562 157** represented by its undersigned of the one part and represented by its undersigned of the other part:

RECITAL:

Where, REVA University and DR Biosciences LLP, shall be hereinafter jointly referred to the parties and singularly as party.

The parties have decided to agree to establish academic and research collaborations in the areas of mutual interest and in accordance with terms and conditions set forth in this Memorandum of Understanding (MoU). Both the parties agree on the following activities:

Academics:

1. Exposing students for Medical Microbiology and Molecular Diagnostics skills with **DR Biosciences LLP** infrastructure and business models.
2. Both the parties shall explore the possibilities of offering joint courses in the field of Medical Microbiology and Molecular Diagnostics of Life Science domain here after
3. **DR Biosciences LLP** shall offer certificate training courses to students of REVA University at company's pilot lab in Bengaluru. The course modules to be offered and logistics would be as mentioned in Annexure A attached. (Minimum Number of students enrolled for module would be 5 and Maximum Number of students would be 15)
4. **DR Biosciences LLP** shall offer hands on training for students related to the domain of Medical Microbiology and Molecular Diagnostics of Life Science in the final (academic) year as per the course module.
5. The course structure and schedule will be determined from time to time as agreed by both parties.
6. The course fee for all modules will be handled through REVA University in a pre-determined manner.
7. **DR Biosciences LLP** shall allow REVA University students for industrial visit as per the convenience and company policy.
8. **DR Biosciences LLP** shall provide faculty development programs to the academic faculty members from REVA University with mutual understanding as per the company policy.
9. Both the parties shall mutually exchange any relevant information on teaching, research, and scientific programs.
10. **DR Biosciences LLP** shall offer Academic/Research projects/Internships and training programs relevant to both parties.
11. Both the parties shall jointly organize seminars, conferences, or workshops on topics of mutual interest and to invite each other's Scientists/Faculty and Staff to participate therein.
12. **DR Biosciences LLP** shall absorb/assist students for placement at relevant industries/ organizations.

Research:

1. REVA University and **DR Biosciences LLP** shall promote active interaction among their staff and explore possibilities for undertaking commercial or government funded joint research and development projects.
2. Scientists, Research Scholars and PhD candidates of both institutions will be encouraged to apply for sponsored or funded projects keeping in view the interests and philosophies of the respective institutions.
3. **DR Biosciences LLP** shall encourage and allow REVA University faculty members for product development in the field of life sciences with mutual consent.

This MoU signed subjects to approval of the respective academic / administrative bodies as attested to this deed on 21.04.2021.

SIGNED BY:




Vice Chancellor
REVA University,
Bengaluru.

Dr. M. Dhanamjaya
Vice Chancellor
REVA University
Rukmini Knowledge Park, Kattigenahalli
Yelahanka, Bengaluru - 560064

Witness:



1) Prof. Shilpa BR
Director
Deputy Director SoAS
School of Applied Sciences
REVA University, Rukmini Knowledge Park
Kattigenahalli, Yelahanka, Bengaluru - 04
2) Dr. Veena V
Assistant Professor 
Dept. of Biotechnology

SIGNED BY:



Dr. Pannuru Padmavathi
Managing Director
DR Biosciences LLP,
Bengaluru.



Witness:



1) Dr. Ashraf Ahamed
Director



Place: Bengaluru.
Date: 21.04.2021.



QUOTATION

Quote No: DRB/Training/012

Date: 05.02.2021

We thank you for your enquiry for training in **DR Biosciences**, We are pleased to submit our offer for our

<p>From, DR Biosciences #17, 1st Floor, Ganganagar, Bettahalasur, Bangalore-562157, INDIA Ph: 91-8978970207 Email: info.drbiosciences@gmail.com www.drbioscience.com GSTIN: 29AAMFD1820B1ZT</p>	<p>To, The Assistant Director Dept of Biotechnology School of Applied Sciences REVA University Yelahanka Bangalore-560064, INDIA</p>
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products mentioned therein on the following terms and conditions.

S.N	List of Experiments	Total Price (Rs.)
1	<p>Module I - Fundamentals of Medical Biochemistry</p> <ol style="list-style-type: none"> 1. Tissue homogenization and cell disruption- Cell fractionation methods 2. Protein extraction and column purification and spectrophotometer analysis 3. Estimation of uric acid from blood. 4. Flowcytometry analysis of blood cells 5. Gelatin zymographic analysis. 6. Isolation and identification of miRNA 7. Estimation of LDH and phosphatase levels in blood with clinical significance. 8. SDS PAGE for protein separation. 9. Western blotting analysis for protein expression. 10. Preparation of immunohistochemistry samples and confocal/fluorescent microscopy. <p>Module II -Fundamentals of Pharmaceutical Microbiology</p> <ol style="list-style-type: none"> 1. Microbiological methods for the determination of Griseofulvin/Streptomycin. 2. Bioassay of chloramphenicol by plate assay method. 3. Antimicrobial susceptibility testing by broth dilution method. 4. To determine MIC, LD50 of Beta-lactam/aminoglycoside/ tetracycline. 5. Sterility testing by <i>Bacillus stearothermophilus</i> 6. Sampling of pharmaceuticals for microbial contamination and load (syrups, suspensions, creams and ointments, ophthalmic preparations). 7. Separation of mononuclear cells by Ficoll-Hypaque and cell viability by MTT assay 8. Identification of blood cells by blood smear and microscopy 9. Isolation of peripheral blood cells and viability testing. 10. Counting and viability assessment of animal cells by direct microscopic methods. 	<p>6,000/- 6,000/- 6,000/- 7,000/- 7,000/- 6,000/- 6,000/- 10,000/- 20,000/- 6,000/- 5,000/- 6,000/- 5,000/- 10,000/- 5,000/- 6,000/- 5,000/- 6,000/- 6,000/- 10,000/-</p>

Tax @18% = 25,920/-

Total: (Inclusive of all taxes) = 1,69,920/-



Dhanamjaya
Dr. M. Dhanamjaya
Vice Chancellor
REVA University
Rukmini Knowledge Park, Kattigenahalli
Yelahanka, Bengaluru - 560064

Roe
Registrar
REVA University
Bengaluru - 560 064



MEMORANDUM OF UNDERSTANDING
For University -Industry Collaboration

MEMORANDUM OF UNDERSTANDING

Between

School of Electronics and Communication Engineering
REVA University, Rukmini Knowledge Park
Kattigenahalli, Yelahanka,
Bangalore-560064

And

VI Solutions
22, 2nd Floor, Akai Plaza
D Rajagopal Road, opp. to Axis Bank
Sanjayanagar,
Bengaluru

For University -Industry Collaboration

This memorandum of understanding dated, 20-5-2024 made between

VI Solutions
22, 2nd Floor, Akai Plaza
D Rajagopal Road, opp. to Axis Bank,
Sanjayanagar,
Bengaluru

And

School of Electronics and Communication Engineering
REVA University
Rukmini Knowledge Park, Kattigenahalli, Yelahanka
Bangalore- 560064
(Herein after referred to as RU)



Signature 1

Vice-Chancellor

REVA University, Rukmini Knowledge Park
Kattigenahalli, Yelahanka, Bengaluru-560 064



Signature 2

REVA UNIVERSITY
Rukmini Knowledge Park, Yelahanka
Post, Bengaluru-560064

TEL +91 80 4696 6966
FAX +91 80 6622 6645
www.reva.edu.in



Registrar

REVA University
Bengaluru - 560 064

MEMORANDUM OF UNDERSTANDING
For University -Industry Collaboration



The first party is and shall be represented by **Mr. Sunil Kumar V**, Managing Director, VI Solutions, and the second party by **Dr. Rajashekhara C Biradar**, Director, School of Electronics and Communication Engineering, RU and **Dr. Nikhath Tabassum**, Assistant Professor, School of ECE, RU. The point of contact from VI Solutions, shall be **Mr. Manimaran A**, Assistant Manager, VI Solutions, and from RU shall be, **Mrs. Ashwini P**, Assistant Professor, School of ECE, **Mrs. Pratima A**, Assistant Professor, School of ECE, **Mr. Ravishankar D**, Assistant Professor, School of ECE, **Mrs. Pallavi R**, Assistant Professor, School of ECE and **Mrs. Kavya B S**, School of ECE.


Signature of Sunil Kumar V

REVA University, Rukmini Knowledge Park
Kattigenahalli, Yelahanka, Bengaluru-560 064



When both parties in this memorandum of understanding have jointly consented to initiate university-industry collaboration program addressing research projects, identifying and applying for funding agencies, establishment of center of excellence or incubation center at University premises internships, conducting workshops, seminars, technical lectures, and such other activities of concern identified and agreed between the two parties which benefit to all the stakeholders.

Whereas VI Solutions, on its part proposes to address the broad area of its interest, under this memorandum, and agrees to do the following:

- 1. Curriculum Design**
Special officers/ experts of VI Solutions, to serve a Board of Studies(BoS) and involve in industry relevant curriculum design.
- 2. Special Lecture series/talks**
VI Solutions Experts to share/dissipate their knowledge to staff and students of REVA University to give an induction about the industrial trends and practices.
- 3. Faculty Exposure to Industry**
Allowing identified RU faculty members to work closely with the TEAM of VI Solutions, in Research and Development teams of RU to have mutual benefits of publications and patents. Also facilitate RU faculty and students to visit VI Solutions, in small batches at the convenience of VI Solutions.
- 4. Academic Exposure to VI Solutions Staff(Studies leading to M.Tech. and /or Ph.D.)**
Providing good support by creating HR policies for staff of VI Solutions, to have higher education in REVA University. Also, special short-term modules could be delivered to VI Solutions, as part of their corporate training based on their requirements.
- 5. Internship Cum Project guidance**
VI Solutions, will consider RU students as first preference to offer internship program for students under which they will receive expert guidance from VI Solutions.


Registrar
REVA University
Bengaluru - 560 064

MEMORANDUM OF UNDERSTANDING
For University - Industry Collaboration



carrying out their projects. Terms and conditions shall be decided from time to time whenever required.

6. Providing Consultancy opportunity

VI Solutions, will consider RU as first preference to offer consultancy opportunity to REVA staff under which they will provide support to VI Solutions, as specified tasks identified by VI Solutions. Terms and conditions shall be decided from time to time whenever required.

7. Establishment / setting up of Center of Excellence or Incubation Center

VI Solutions To aid in setting up LabVIEW Academy and support to various lab experiment designs and testing/ incubation center at REVA University premises. VI Solutions, will have access to utilize research facility/lab in addition to utilization by REVA University.

Establishment of such facility depends upon planning for funds required for the same. Both parties are responsible to plan for acquiring such funds through funding agencies at state level, national level and international level. Joint proposals by both parties should be prepared and submitted to identifies agencies.

The equipment/ components and any other product purchased out of funds received from the external agency are the property of the university.

Any travel grant, research assistance ship received as part of the funding may be shared among the people involved from both the parties.

Revenue earned out of a product designed and the consultancy should be shared among both the parties based on amount of involvement on either side and sharing will be different for different products and projects.

VI Solutions Pvt. Ltd., should assist in providing the industry related information for filling the format of the proposals.

8. Other Collaborated activities between the university- industry

- a. Two- way transfer of technical information and knowledge through collaborative programs like Guest lectures, Seminars, Symposia and other interactive programs.
- b. Exchange of technical experts between the institute and the industry for knowledge dissemination.
- c. Provide free access to knowledge resources at the university and the industry.
- d. Utilize with consent the laboratory and testing facilities available at the university/industry for execution of joint ventures/activities.
- e. Provide technical assistance/guidance to UG/PG projects undertaken and research work of mutual interest.

Vice-Chancellor

REVA University, Rukmini Knowledge Park
Kattigenahalli, Yelahanka, Bengaluru-560 064



Registrar
REVA University
Bengaluru - 560 064

MEMORANDUM OF UNDERSTANDING
For University - Industry Collaboration



- f. Participation in joint research projects to UGC, AICTE, SERB, DST, DRDO, DSIR, ICMR, MOSIT, ISRO, DOE, INSA, SMSE, et., and other public- sector units.
- g. Participation of joint consultancy.
- h. Promote and support innovative projects undertaken by students and faculty.

Both the parties to this understanding shall discuss and finalize the details of these and all the activities on mutual acceptance basis, from time to time.

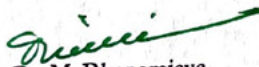
Both the parties consent to carry out all the obligations mutually agreed upon from time to time. Neither party will be liable to the other for any delay or in failure of performance of their respective obligations under this agreement caused by occurrences of force major events or other factors reasonably beyond the control of both parties. In such events, both the parties shall inform each other of the circumstances in writing.


Any alteration, agenda or edition to the agreement can be made by mutual agreement in writing. Both parties consent to settle differences, if, any, amicably by friendly consultations. Generally, such consultations will be between the signatories to this agreement. The decision made so will be binding on both parties.

This MOU shall be governed by and be constructed and take effect in all respects in accordance with the Laws of India and the Parties submit to the exclusive jurisdiction of the courts in Bengaluru.

Both parties can terminate this MOU by giving notice for a period of 30 days in writing. In case of termination of this agreement in any circumstances, both parties will ensure the existing students/ faculty/ staff are not affected about ongoing training, project or other activity.

This agreement shall come into force on the date set forth on the first page hereof and shall remain in force for the duration of **1 Year** only and in full agreement of the foregoing conditions, both the parties sign as under and deliver copies to each other.


Dr. M. Dhanamjaya
Vice Chancellor
REVA University
Bengaluru


Mr. Sunil Kumar V
Managing Director
VI Solutions
Bengaluru

(Signature & Seal)

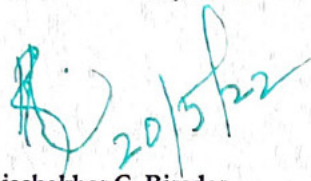
(Signature & Seal)

Vice-Chancellor
REVA University, Rukmini Knowledge Park
Kattigenahalli, Yelahanka, Bengaluru-560 064


Registrar
REVA University
Bengaluru - 560 064

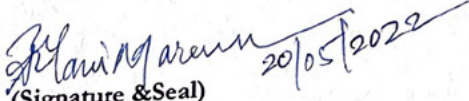
MEMORANDUM OF UNDERSTANDING
For University -Industry Collaboration




Dr. Rajashekhar C. Biradar
Director, School of ECE
REVA University
Bengaluru

Mr. Manimaran A
Assistant Manager
VI Solutions
Bengaluru

(Signature & Seal)


(Signature & Seal)



INDIA NON JUDICIAL

Government of Karnataka

Rs. 200

e-Stamp

Certificate No. : IN-KA74477135973215U
Certificate Issued Date : 23-Mar-2022 11:04 AM
Account Reference : NONACC (FI)/ kaksfcl08/ NAGASANDRA1/ KA-BA
Unique Doc. Reference : SUBIN-KAKAKSFCL0882332988617770U
Purchased by : KENNAMETAL SHARED SERVICES PRIVATE LIMITED
Description of Document : Article 12 Bond
Description : AGREEMENT
Consideration Price (Rs.) : 0
 (Zero)
First Party : KENNAMETAL SHARED SERVICES PRIVATE LIMITED
Second Party : REVA UNIVERSITY
Stamp Duty Paid By : KENNAMETAL SHARED SERVICES PRIVATE LIMITED
Stamp Duty Amount (Rs.) : 200
 (Two Hundred only)

सत्यमेव जयते

REVA UNIVERSITY
 KENNAMETAL SHARED SERVICES PRIVATE LIMITED

Authorised Signatory



Please write or type below this line

Memorandum of Understanding

This Memorandum of Understanding ('MOU') is entered into at Bangalore on 24th March 2022, by and between M/s Kennametal Shared Services Pvt Limited, a Company registered under the Companies Act, 1956, having a place of business at 8/9th Mile, Tumkur Road, Bengaluru - 560073 (hereafter referred to as "Kennametal") represented by Mr. Shivaprakash M S on the First Part.



Shivaprakash M S
 24/3/2022

1

[Signature]
 - Vice-Chancellor

REVA University, Bukmini Knowledge Park
 Kattigenahalli, Yelahanka, Bengaluru
 REVA University
 Bengaluru - 560 064

1. The authenticity of this Stamp certificate should be verified at 'www.shcilestamp.com' or using e-Stamp Mobile App or Stock Holding.
 Any discrepancy in the details on this Certificate and as available on the website / Mobile App renders it invalid.
 2. The onus of checking the legitimacy is on the users of the certificate.
 3. In case of any discrepancy please inform the Competent Authority.

And

Reva University having its campus at Rukmini Knowledge Park, Kattigenahalli, Yelahanka, Bengaluru, Karnataka 560064, (here after referred to as "**REVA University**") represented by its Vice Chancellor **Dr. M. Dhanamjaya** on the Second Part.

The expressions shall unless excluded by or repugnant to the context be deemed to include their heirs, executors, administrators, legal representatives, and assigns.

Each of the above Parties viz., Kennametal and REVA University shall be individually referred to as a Party and collectively as 'Parties' throughout this MOU.

Details of Understanding

REVA University and **Kennametal** agree to enter in writing these areas of consensus, under a Memorandum of Understanding to collaborate, to support and facilitate various activities relating to the students internship, placement, research and technical project support for the company etc.

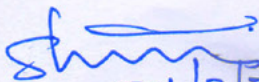
Now this Memorandum of Understanding witnesses that:

- **Kennametal** shall participate in the following Employer Branding & Recruitment (EBR) activities with **REVA University** as agreed between the two parties. (Reva University shall obtain prior written consent of Kennametal before using any brand of Kennametal for any purpose.)
- **Kennametal** at its discretion, shall offer Internship Opportunities for the Graduates and Post Graduates during their period of study at **REVA University**.

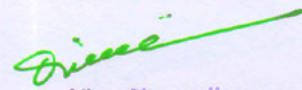
REVA University would engage in providing the following facilities / support to **Kennametal**:

1. **REVA University** shall at all reasonable times ensure that it shall be solely responsible for its (including its students/ authorized officials) gross negligence, fraud, breach of confidentiality or breach of third party intellectual property rights, loss if any caused to any property or person during the project
2. **REVA University** shall provide qualified students for Internship Program and Graduate / Post Graduate Engineer Trainee Recruitment Program in alignment with **Kennametal** Recruitment policy. For the Campus Placement Program, **REVA University** proposes to give **Kennametal** one of the privilege slots.




24/3/2022

2



Vice-Chancellor

REVA University, Rukmini Knowledge Park,
Kattigenahalli, Yelahanka, Bengaluru-560064


Registrar

REVA University
Bengaluru - 560 064

3. **REVA University** shall also provide platform for guest lectures to be delivered by Kennametal's Technical Experts.
4. **REVA University** would encourage the students to visit **Kennametal** premises to render a practical exposure to the students.
5. **REVA University** would also help and assist **Kennametal** for any project requirement or any technical assistance if required through research, technical guidance, or coaching by Qualified & Experienced Faculty to **Kennametal** Employees.

TERM OF MOU:

This MOU shall be effective as of the Effective Date and shall continue for a term of 2 (two) years unless terminated by either party upon 2 (two) months written notice. Upon the expiry of this MOU due to efflux of time, the Parties may renew this MOU at mutual agreed terms.

CONFIDENTIAL INFORMATION AND TRADE SECRETS

REVA University and **Kennametal** shall not directly or indirectly impart, disclose, share or use any confidential information as mentioned herein, except with the prior written consent of each other.

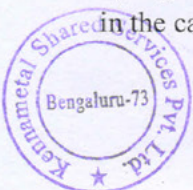
The Parties understands that a separate Confidentiality Agreement has been executed between them on 24th March 2022 and all matters relating to this clause shall be dealt in by the said Mutual Confidentiality Agreement.

COMPLIANCE WITH LAWS

The construction and interpretation of the provisions of this MOU shall at all times and in all respects be governed by the laws of the Government of India. The Courts in Bangalore alone shall have the jurisdiction to resolve upon any disputes arising hereunder.

MISCELLANEOUS

1. In the event that any provision of this MOU is considered to be invalid, illegal or unenforceable in whole or in part for any reason, such provision or part thereof shall be severable from the remaining provisions, and the remaining provisions shall continue to be in force and effect and shall be enforceable notwithstanding such invalidity, illegality or unenforceability.
2. Any notice required to be given hereunder shall be sufficient if given in writing and sent by registered post, to the Second Party's address as shown on the **Kennametal** records, and in the case of the **Kennametal**, to its registered office or by means of e-mail.



Shrini
24/3/2022

3

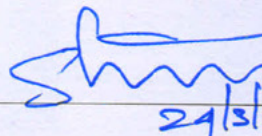

Quince
Vice-Chancellor
REVA University, Rukmini Knowledge Park
Kattigenahalli, Yelahanka, Bengaluru - 560 064
BC
Registrar
REVA University
Bengaluru - 560 064

3. This MOU can be amended only in writing signed by both the parties.
4. No modification, amendment, supplement to or waiver of this MOU or any of its provisions shall be binding upon the parties hereto unless made in writing and duly signed by the party against whom enforcement thereof is sought.

A failure or delay of any party to this MOU to enforce at any time any of the provisions of this MOU or to exercise any option which is herein provided, or to require at any time performance of any of the provisions hereof, shall in no way be construed to be a waiver of such provisions of this MOU.

5. This MOU hereto constitutes the entire understanding between the Parties with respect to its subject matter. Upon its execution and delivery by both Parties, this MOU shall constitute the entire understanding between the Parties with respect to the subject matter hereof and hereby terminates and supersedes any prior agreements / understandings / MOU / letters whether oral or written between the Parties pertaining to the Purpose / scope as described in this MOU. This MOU shall be binding upon the respective successors and assigns of the Parties hereto. No delay or omission by either Party in exercising any right under this MOU shall operate as a waiver of that or any other right. If any provision of this MOU shall be held invalid or unenforceable for any reason, such invalidity or unenforceability shall attach only such provision and shall not affect or invalidate any other provision of this MOU.


IN WITNESS WHEREOF, the parties herein have set their hand as of the date, month and year first written above

Signature:  

Name: Mr. Shivaprakash M. S.

Designation: DGM, Technology Center.

Witness:

Signature:  24/3/22

Name: Dr. M. Dhanamjaya

Designation: Vice Chancellor

Vice-Chancellor

REVA University, Rukmini Knowledge Park
Kattigenahalli, Yelahanka, Bengaluru-560 064

Witness:


Registrar
REVA University
Bengaluru - 560 064

Ref: RU/PhD-VIII/2021-22

To

Mr. Shashidhar M Kotian

SRN: R21PME06,

School of Mechanical Engineering

REVA University

Date: 20.01.2023

Dear Madam,

Sub: PhD registration.

Ref: Your Provisional Registration No. R21PME06 dated 30-10-2021

Greetings from REVA University!

We congratulate you on successful completion of PhD Course Work and also for having defended your research proposal before the Doctoral Committee. We are happy to inform you that your research proposal has been accepted by the Board of Studies concerned and accordingly your provisional registration has been regularized from 30-10-2021 with conditions detailed below. The details of your registration and the effective date of registration are as under:

Subject	Title of the Research Topic	Name of the Guide & Address	Name of the Co-Guide & Address	Effective Date of Registration
Mechanical Engineering	"Development of Nano Cutting Inserts for Machining HRSA Materials for Aerospace applications"	Dr. K S Narayanaswamy, Professor & Director, School of ME, REVA University, Rukmini Knowledge Park, Kattigenahalli, Yelahanka, Bengaluru – 560 064	--	30-10-2021

Conditions:

1. You have to submit progress report of research once in three months and appear for the progress review presentation once in every six months before the doctoral committee. The research progress report has to be duly certified and signed by the concerned guide, co-guide if any and forwarded through the Director of the concerned School, failing which the registration may be cancelled automatically.
2. You are required to appear before the Doctoral Committee once in six months and present your progress.
3. Before submission of the Ph.D. thesis, you should have published research articles relating to your research in any Journal listed in Web of Science, Scopus or such other well recognized databases as per the REVA University regulations.
4. You are eligible to submit the Pre-Thesis Synopsis only after obtaining the permission from the doctoral committee in the Pre-thesis submission colloquium. You can submit the Thesis after the successful completion of Pre-Thesis Submission Colloquium.
5. The thesis should be in the form and style provided in the REVA University regulations governing the standards and procedures for award of the degree of Doctor of Philosophy.
6. The prescribed fee has to be paid on time annually by October -30th of every academic year till the submission of Thesis.
7. The final thesis has to be submitted within three years from the date of registration failing which you may apply to University for **Extension of Registration for a maximum of two more years** with the recommendation of the Doctoral Committee, through the Research Guide and Co-Guide if any, and director of the concerned School.
8. Other conditions are as per the provisions in the REVA University regulations governing the standards and procedures for award of the degree of Doctor of Philosophy (Ph.D.).


Dr. Divakar B P
Director, R & D-C


Copy with Compliments to:

- 1) The Vice – Chancellor, REVA University, Bengaluru
- 2) The Registrar, REVA University, Bengaluru
- 3) The Head of the School concerned, REVA University / Head of concerned Dept. of RITM/RISM, Bengaluru
- 4) The Guide / Co-Guide concerned
- 5) The Office copy

Ref: RU/PhD-VIII/2021-22

Date: 30-10-2021

To,
Mr/Ms. SHASHIDHAR M KOTIAN
SRN: R21PME06

Dear Sir/Madam,

Sub: Provisional registration to Ph.D. Program in Mech Engg

Greetings from REVA University!

With reference to the above, REVA University is pleased to grant you provisional admission for Ph.D. studies in Mech Engg under the Supervision of Dr. K S Narayanswamy, REVA University, Rukmini Knowledge Park, Kattigenahalli, Yelahanka, Bangalore, with the conditions* mentioned below.

You are requested to approach your Research Supervisor and the Chairperson of the concerned School of Studies/ Director of the School of Studies to know the schedule of the course work and other academic activities for the Ph.D. study. As per REVA University Ph.D. Regulations, you are required to complete **one semester course work** followed by identification of the title of the research project within 6 months from the date of provisional registration. You will also have to prepare a research proposal in consultation with your Research Supervisor, Co-Supervisor, if any and submit five copies of the research proposal (Synopsis) through your Research Supervisor, Co-Supervisor and further present the Pre-Registration Colloquium before the Doctoral Committee.

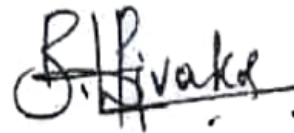
For further details, please refer to the REVA University regulations governing the standards and procedures for the degree of Doctor of Philosophy (Ph.D), which will be sent to you by e-mail.

The date of commencement of course work will be informed shortly through e-mail and also will be hosted on University website.

REVA University would like to take this opportunity to congratulate you and wish that your Ph.D. study would be productive and useful in your future career.

***Condition of Provisional Registration for PhD**

1. This registration for pursuing PhD is only provisional. You will be issued the regular registration only after successful completion of one semester course work, on successful completion of pre-registration colloquium before Doctoral Committee and approval of your research proposal by the concerned BOS. However, your date of registration will be effective from the date of provisional registration.
2. You have to submit the progress report of research once in every three months and appear for progress review presentation before the doctoral committee once in every six months. The Progress report of research has to be duly certified and signed by the concerned Research Supervisor, Co-Supervisor and forwarded through the Chairperson of the concerned School, failing which the registration may be cancelled automatically.
3. You are eligible to submit the Pre-Thesis Synopsis only after obtaining the permission from the doctoral committee in the Pre-thesis submission colloquium which will be conducted after the candidate has completed a minimum of three years from the date of Registration and also satisfied the publication requirements as per the REVA University regulations you can submit the Thesis after the successful completion of Pre-Thesis Submission Colloquium.
4. The prescribed fee has to be paid on time annually by October -30th of every academic year till the submission of Thesis.
5. Other conditions are as per the provisions in the REVA University regulations governing the standards and procedures for the degree of Doctor of Philosophy (PhD).



Dr. B P Divakar

Dean

Research and Innovation Council

REVA University



Registrar
REVA University
Bengaluru - 560 064

KENNAMETAL INDIA LTD

8th/9th Mile, Tumkur Road,
Bangalore- 560073



CERTIFICATE

This is to certify that the internship in **KENNAMETAL INDIA LIMITED** is carried out by **JAYASURYA K V (R19ME054)** a bonafide student at **Reva University** in partial fulfilment for the award Bachelor of Technology in Mechanical Engineering during the year **2022-2023**. It is certified that all corrections/suggestions indicated for continuous internal assessment have been incorporated in the report. To the best of our knowledge this report has been approved as it satisfies the requirements in respect of Internship.



MR. SANDEEPKUMAR T
SENIOR MANAGER
PU-6, KENNAMETAL



MR. MURALI B A
ASSISTANT MANAGER
PU-6, KENNAMETAL



MR. RAJESH NAIR
EXECUTIVE HR
KENNAMETAL Registrar
REVA University
Bengaluru - 560 064



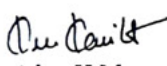
13th September 2022
Bangalore

CERTIFICATE

This is to certify that **Mr. Aprameya Udupa**, bearing Regd. no: R19ME009, B. Tech in Mechanical Engineering student from Reva University, Bangalore has successfully completed his Internship on **FEA, CFD and Data Analytics** in our organization from **19th July 2022 to 31st August 2022**.

We wish him all the success in his future endeavors.

For Kennametal Shared Services Pvt Limited


Kavitha K M
Manager - Human Resources.



13th September 2022
Bengaluru

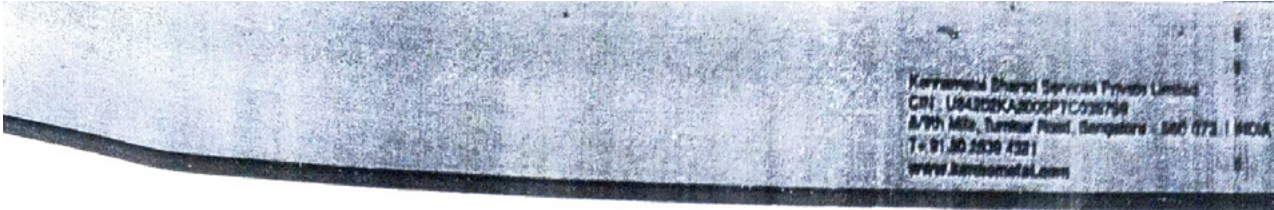
CERTIFICATE

This is to certify that **Mr. Adithya Pawar**, bearing Regd. no. R19ME003, B. Tech in Mechanical Engineering student from Reva University, Bengaluru has successfully completed his Internship on **NC Programming** in our organization from 19th July 2022 to 31st August 2022

We wish him all the success in his future endeavors

For Kennametal Shared Services Pvt Limited


Kavitha K M
Manager - Human Resources



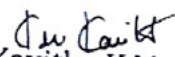
13th September 2022
Bangalore

CERTIFICATE

This is to certify that **Mr. Chethan B**, bearing Regd. no: R19ME018, B. Tech In Mechanical Engineering student from Reva University Bangalore, has successfully completed his Internship on **Manufacturing of Cutting Tools and Carbide Inserts** in our organization from **19th July 2022 to 31st August 2022**.

We wish him all the success in his future endeavors.

For Kennametal Shared Services Pvt Limited


Kavitha KM
Manager - Human Resources.




13th September 2022
Bangalore


CERTIFICATE

This is to certify that the following B. Tech in Mechanical Engineering students from Reva University Bangalore, have successfully completed their Internship on "**Regression Analysis on Press Force and Green Insert Weight**" in our organization from 18th July 2022 to 11th August 2022.

1. Mr. Mohith C G (R19ME075)
2. Mr. Nagendra A N (R19ME177)

We wish them all the success in their future endeavors.

 For Kennametal India Limited


Samyakth Ballal
Deputy General Manager Human Resources




13th September 2022
Bangalore


CERTIFICATE

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1. Mr. Mohith C G (R19ME075)
2. Mr. Nagendra A N (R19ME177)

We wish them all the success in their future endeavors.

 For Kennametal India Limited


Samyakth Ballal
Deputy General Manager Human Resources

KENNAMETAL INDIA LTD

8th/9th Mile, Tumkur Road,
Bangalore- 560073



CERTIFICATE

This is to certify that the internship in **KENNAMETAL INDIA LIMITED** is carried out by **KOUSHIK NP (R19ME063)** a bonafide student at **Reva University** in partial fulfilment for the award Bachelor of Technology in Mechanical Engineering during the year **2022-2023**. It is certified that all corrections/suggestions indicated for continuous internal assessment have been incorporated in the report. To the best of our knowledge this report has been approved as it satisfies the requirements in respect of Internship.



MR. SANDEEPKUMAR T
SENIOR MANAGER
PU-6, KENNAMETAL

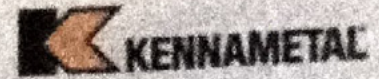


MR. MURALI B A
ASSISTANT MANAGER
PU-6, KENNAMETAL



MR. RAJESH NAIK
EXECUTIVE HR
KENNAMETAL

Kennametal Shared Services Private Limited
C/O: 194/22/MAHARAJA STREET
5th Floor, 5th Cross Road, Bangalore - 560 074 - 9920
T: +91 80 3422 0000
www.kennametal.com



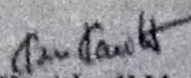
28th September 2022
Bangalore

CERTIFICATE

This is to certify that **Mr. Rafi S K**, bearing Regd. no: R19ME094, B. Tech in Mechanical Engineering student from Reva University Bangalore, has successfully completed his internship on "**A Study on Manufacturing and Testing of Cutting Tools and Inserts**" in our organization from **19th July 2022 to 31st August 2022**.

We wish him all the success in his future endeavors.

For Kennametal Shared Services Pvt Limited


Kavitha K M
Manager - Human Resources.

Kennametal Shared Services Private Limited
CIN : U04202KA2000PTC0085759
8/9th Mile, Tandoor Road, Bengaluru - 560 073, INDIA
T: 81 80 2629 4321
www.kennametal.com



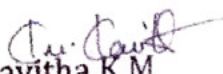
14th September 2022
Bangalore

CERTIFICATE

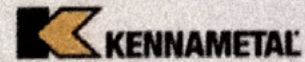
This is to certify that **Mr. Dhananjay B Patel**, bearing Regd. no: R19ME026, B. Tech in Mechanical Engineering student from Reva University Bangalore, has successfully completed his **Internship** in our organization from **19th July 2022 to 31st August 2022**.

We wish him all the success in his future endeavors.

For Kennametal Shared Services Pvt Limited


Kavitha K M
Manager - Human Resources.


Registrar
REVA University
Bengaluru - 560 064



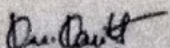
14th September 2022
Bangalore

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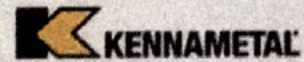
This is to certify that **Mr. Karan K**, bearing Regd. no: R19ME05B, B. Tech in Mechanical Engineering student from Reva University Bangalore, has successfully completed his internship on "**Manufacturing and Testing of Cutting Tools and Inserts**" in our organization from **19th July 2022 to 31st August 2022**.

We wish him all the success in his future endeavors.

For Kennametal Shared Services Pvt Limited


Kavitha KM
Manager - Human Resources.

Kennametal Shared Services Private Limited
CIN: LN43202KA2008PTC028759
8/9th Mile, Tumkur Road, Bangalore - 560 072, INDIA
T: 91 80 2839 4321
www.kennametal.com



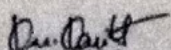
14th September 2022
Bangalore

CERTIFICATE

This is to certify that **Mr. Karan K**, bearing Regd. no: R19ME05B, B. Tech in Mechanical Engineering student from Reva University Bangalore, has successfully completed his internship on "**Manufacturing and Testing of Cutting Tools and Inserts**" in our organization from 19th July 2022 to 31st August 2022.

We wish him all the success in his future endeavors.

For Kennametal Shared Services Pvt Limited


Kavitha K M
Manager - Human Resources.


Registrar
REVA University
Bengaluru - 560 066
Page 14




28th September 2022
Bangalore

CERTIFICATE

This is to certify that Ms. Aishwarya G M, bearing Regd. no: R19ME005, B. Tech in Mechanical Engineering student from Reva University, Bangalore has successfully completed her Internship on "Manufacturing and Testing of Cutting Tools and Inserts" in our organization from 19th July 2022 to 31st August 2022.

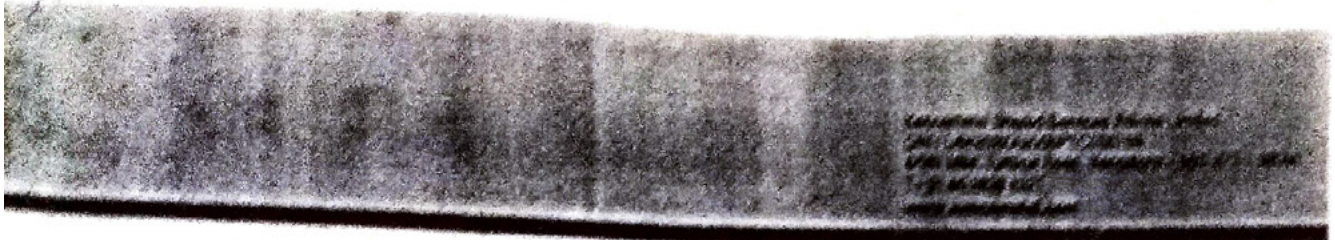
We wish her all the success in her future endeavors.

For Kennametal Shared Services Pvt Limited


Kavitha K M
Manager - Human Resources.

Kennametal India Ltd

2022



13th September 2022
Bangalore

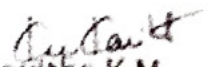
CERTIFICATE

This is to certify that the following B. Tech in Mechanical Engineering students from Reva University Bangalore, have successfully completed their internship on **Dies and Wear Parts** in our organization from 19th July 2022 to 31st August 2022.

1. Mr. Ameeth Y Alva (R19MH005)
2. Mr. G Mohammed Ghouse (R19ME032)

We wish them all the success in their future endeavors.

For Kennametal Shared Services Pvt Limited


Kavitha K M
Manager - Human Resources


Registrar
REVA University
Bengaluru - 560 064

Kennametal India Ltd

2022



13th September 2022
Bangalore

CERTIFICATE

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1. Mr. Ameeth Y Alva (R19MH005)
2. Mr. G Mohammed Ghouse (R19ME032)

We wish them all the success in their future endeavors.

For Kennametal Shared Services Pvt Limited


Kavitha K M
Manager - Human Resources


Registrar
REVA University
Bengaluru - 560 064



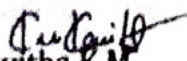
14th September 2022
Bangalore

CERTIFICATE

This is to certify that **Ms. Tejaswini S Patil**, bearing Regd. no: R19ME051, B. Tech in Mechanical Engineering student from Reva University Bangalore, has successfully completed her **Internship** in our organization from **25th July 2022 to 31st August 2022**.

We wish her all the success in her future endeavors.

For Kennametal Shared Services Pvt Limited


Kavitha K M

Manager - Human Resources.


Registrar
REVA University
Bengaluru - 560 064

Sl. No.	Activities Name
1	ST. Claret College Students Visit To REVA NEST – Technology Business Incubation Center & FAB LAB”
2	Report on Bamboo Workshop
3	Policy for recruiting foreign Faculty
4	Article on Advanced strategies for hydrogen generation by rhodium metal catalysts coated by the electro-deposition method
5	Session on Risk Assessment of Product & Innovation Development
6	Conference on international congress on renewable energy
7	Webinar on skill and Employability
8	Sanskrit arts festival and Women’s world art festival
9	Nadabrahma- Women Empowerment Program
10	Guest Lecture on Architecture, Engineering, and Construction
11	SDP at Biozeen
12	Ski Development Program (SDP) at ASPARTICA BIOTECH PVL
12.1	SDP at Azyme Biosciences Pvt Ltd
13	Student Workshop on Cloud Computing
14	Internship - SECIQ
15	Post Conference Report on International Congress on Renewable Energy
16	Webinar on Opportunities for civil engineers in Defence Focus area as commissioned officers
17	Skill development program on basics of Extraction quality analysis of plant Extracts



REVA NEST – Technology Business Incubation Center

Organizes

“ST. Claret College Students Visit To REVA NEST – Technology Business Incubation Center & FAB LAB”

<p>About Event</p>	<p>REVA NEST – Technology Business Incubation Center organized St. Claret college student’s visit to REVA NEST & REVA FABLAB on 25th November 2022 at 10:30 AM.</p> <p>Students who Visited the REVA NEST and REVA Fab Lab understood the facilities and ecosystems created to nurture the startups. Also, students attended the Session on the Successful startup journey of Mr. Ganesh Rao, Founder of, ARKVESRE Pvt Ltd. And Session on Intellectual Property Rights from Ms. Arshiya Ambreen.</p> <p>A total of 50 students & 2 Faculty coordinators from ST. Claret College attended the program.</p>
<p>Organized By</p>	<p>REVA NEST – Technology Business Incubation Center</p>
<p>Coordinator Name</p>	<p>Ms. Malathi R & Mr. Adithya Poojary</p>
<p>Date</p>	<p>25th November 2022</p>
<p>Time</p>	<p>10:30 AM to 12:30 PM</p>
<p>Targeted Audience</p>	<p>2nd Sem Students of MCA, St. Claret College</p>
<p>Total Students</p>	<p>50 Students</p>



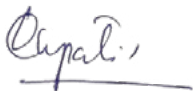
REVA University
Bengaluru - 560 064

Total Staff Members	02 Staff Members
Outcome of the Event	Students from ST Claret College understood about the Incubation Center and how it can help start-up businesses & when they visited FAB LAB and observed laser printing machines and 3D printing in FAB LAB.

Event Photographs:







Director

REVA ASPIRING YOUTH FOUNDATION
REVA NEST
C.V. Raman Block, REVA University Campus
Rukmini Knowledge Park, Kattigenahalli
Yelahanka, Bangalore - 560 064



Vice Chancellor

Vice-Chancellor

REVA University, Rukmini Knowledge Park
Kattigenahalli, Yelahanka, Bengaluru-560 064



Registrar

REVA University
Bengaluru - 560 064

School of Architecture

Report on Bamboo workshop at IPIRTI

INDUSTRY INTEGRATED LEARNING (Hands on Experience with bamboo)

Faculty coordinator: Ar. Kinjal Sheth , Er. Nagaraja

Activity: Bamboo Workshop

Venue: IPIRTI Bengaluru Campus

Program coordinator: Mr. Amitava Sil, Scientist and Head IPIRTI Field Station Kolkata

Date: .06.09.2022 to 07.09.2022

No. of Students: 25

About the Event/Activity: School of Architecture, REVA University organized two days' workshop "Understanding with Bamboo" at IPIRTI – Indian Plywood Industries Research & Training Institute, Bangalore to promote the research and skill development in bamboo structures.

As a part of MOU, IPIRTI may organize various activities including research funded projects, workshops, seminars and conferences in the field of bamboo. We as School of Architecture enhance our knowledge on bamboo construction and facilitate students by collaborating with IPIRTI. We conducted the workshop for our students from 7th semester SDL course.

We would like to thank our Director, Prof. Vidya Srikanth for her immense support in encouraging such initiatives.

About the Program:

Bamboo is an eco-friendly natural resource known for its rapid growth. Students will receive knowledge and skills as well as awareness of and practice in utilizing technologies that use bamboo, possibly in combination with other materials, and that help to conserve the environment. To become expert craftsman, confident in manifesting your design and ideas using bamboo as a material.

Objectives of the program:

- Learning how to use bamboo as a material
- To provide exposure to various tools and techniques for bamboo construction.
- Providing awareness on various standards and codes for use bamboo as structural and nonstructural elements
- Providing exposure on treatment process of bamboo to enhance durability
- Hands-On Experience – making bamboo truss.

- Learning cutting, joineries and splitting of Bamboo

Program schedule is attached with this report for reference.





Two-Day Workshop on "Understanding Bamboo" from 06th to 07th September, 2022 at IPIRTI Bengaluru

Program Schedule

Day 1: 06th September, 2022

Opening Session 09:30 am - 11:00 am Moderator: Shri. Ramkumar V R		
09:00 am - 10:00 am	Registration	Mr. Chittipoo Srinivas
10:00 am - 10:05 am	Welcome Address	Dr. Shikhi Singh Chhabra, Director, IPIRTI
A round of self-introduction		
10:06 am - 10:10 am	Bamboo and its properties	Shri. Anitava Sii, Scientist, IPIRTI
10:11 am - 10:40 am	Potential of Bamboo as a wood substitute	Dr. Vipin Kumar Charvia, Scientist, IPIRTI
Tea Break		
Session I (Theory) 11:25 am - 01:00 pm Moderator: Ms. Gargi Maity		
11:26 am - 12:15 pm	Bamboo - Culm, Pith, Joint, Connection	Shri. Ramkumar V R, Scientist, IPIRTI
12:16 pm - 01:00 pm	Bamboo Housing/Techniques	Shri. Anitava Sii, Scientist, IPIRTI
Lunch Break		
Session II (Lab - Carpentry) 2:30 pm - 5:30 pm		
Photo Session		
02:00 pm - 2:15 pm	Working with bamboo, Tools	Shri. Anitava Sii, Scientist, IPIRTI & Shri. Ramkumar V R, Scientist, IPIRTI
02:16 pm - 05:30 pm	Joint types, Connections Making Bamboo Truss	Shri. Anitava Sii, Scientist, IPIRTI & Shri. Ramkumar V R, Scientist, IPIRTI

Day 2: 7th September 2022

Session III (Theory & Practical)
09:30 am - 01:00 pm
Moderator: Ms. Gargi Maity

09:30 am - 10:30 am	Treatment Process of Bamboo and its Standards (Hot and Cold process, dipping process, Boilcherie process, nodal injection process)	Dr. Radhika Shanbhag, Scientist, IPIRTI
Tea Break		
10:31 am - 10:45 am		Shri. Anand N, Scientist, IPIRTI & Shri. Ramkumar V R, Scientist, IPIRTI
10:46 am - 01:00 pm	Lab Testing of Bamboo and Visit to Model Bamboo Houses	
Lunch Break		
Session IV (Field Demonstration) 1:45 pm - 5:30 pm		
02:01 pm - 04:00 pm	Field demonstration of bamboo treatment operation.	Dr. Radhika Shanbhag, Scientist, IPIRTI & Shri. Anitava Sii, Scientist, IPIRTI
04:01 pm - 04:30 pm	Take away from the workshop	Shri. Anitava Sii, Scientist, IPIRTI & Shri. Ramkumar V R, Scientist, IPIRTI
04:31 pm - 05:30 pm	Distribution of Certificates	Director and Joint Director, IPIRTI

Drishti
Vice-Chancellor
REVA University, Rukmini Knowledge Park
Kattigenahalli, Yelahanka, Bengaluru-560 064

Vidya Srikantha
15/09/22
Director
School of Architecture
REVA University
Rukmini Knowledge Park, Bengaluru - 560 064
Registrar

Policy for Recruiting Foreign Faculty as Adjunct / Visiting Faculty

Annexure I

The following are the rules for providing honorarium to the visiting/adjunct faculty from abroad

- i) Travelling expenses for visiting professor / Adjunct professor to be provided by REVA university as per actual cost of the onward and return journey ticket (Economy Class)
- ii) \$ 2000 to be paid as Honorarium for the completion of one course in offline mode with minimum contact hours 40 (USD 50 per hour)
- iii) If half of the syllabus is covered in offline mode (20 hours), \$1000 should be paid as honorarium (USD 50 per hour)
- iv) If the course is to be completed online, \$1000 should be paid as honorarium (USD 25 per hour)
- v) If half of the syllabus is covered in online mode, \$500 should be paid as honorarium (USD 25 per hour)
- vi) Apart from regular courses, if the visiting/adjunct faculty provide any certification course to both students/faculty which leads to consultancy or research, 40% of the course fees should be paid as honorarium.
- vii) If any foreign faculty is invited as expert to deliver a keynote in REVA international Conferences in offline, for Professor \$ 200 If Associate Professor USD 100 should be paid as honorarium.
- viii) If any foreign faculty is invited as expert to deliver a keynote in REVA international Conferences in online, for Professor \$ 100 If Associate Professor USD 50 should be paid as honorarium.
- ix) If any foreign faculty is being utilized as Chairperson for a session in REVA international Conferences in offline, for Professor \$ 100 If Associate Professor USD 50 should be paid as honorarium.
- x) If any foreign faculty is being utilized as Chairperson for a session in REVA international Conferences in online, for Professor \$ 50 If Associate Professor USD 25 should be paid as honorarium.
- xi) If any foreign faculty is invited as expert to deliver a Guest Lecture offline, for Professor \$ 200 If Associate Professor USD 100 should be paid as honorarium.
- xii) If any foreign faculty is invited as expert to deliver a Guest Lecture/ webinar online, for Professor \$ 50 If Associate Professor USD 25 should be paid as honorarium.
- xiii) As Foreign Collaboration is needed for ranking purposes and knowledge sharing from various parts of the globe, Each School to consider three visiting faculties per year

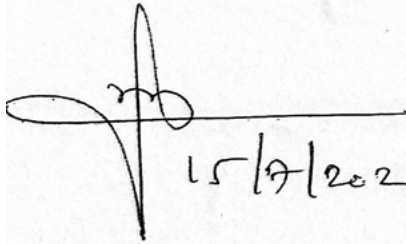
Session Link:

https://teams.microsoft.com/l/meetup-join/19%3ameeting_ODBhODRkZWltMDcxYi00YWU2LTk2ZTQqMTkzOWVhMTAxODVm%40thread.v2/O?context=%7b%22Tid%22%3a%22474565c1-bca4-4295-a2f5-b0c7dbf2591c%22%2c%22Oid%22%3a%22fcd9a07-959d-486f-a159-f517e3193d25%22%7d

Session Attended students list:

SRN	Candidate Name
R21TA001	KOYYA VISHNU TEJA
R21TA002	M PUNEETH
R21TA003	MAHIMA RAWAT
R21TA004	NAGASHREE P S
R21TA005	PRASHANTH H K
R21TA006	PUNARVASU R KAVALOOR
R21TA007	SIDDIQA SANIYA
R21TA008	SACHIN K
R21TA009	MANU SUDHAN

• M.Tech AI students attended 16 hours sessions online whose link is above.


15/9/2022

Date : 21.04.2021

Dear Professor P. Shivakumara,

Warm Greetings of the day!!

Appreciating your achievements and progress in the areas of Computer Science and Engineering, we feel proud to offer you an appointment as an Adjunct faculty in the schools of Computer Science and Engineering & Computing and Information Technology, REVA University, Bengaluru.

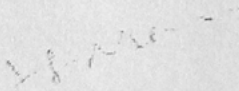
As already brought to your notice, you will be included in our list of faculty members so as to

- 1) Organize invited talks online,
- 2) Organize seminars/ workshops online (or offline).
- 3) Organize lectures on topics of a course online,
- 4) Organize lectures on complete course online (or offline).
- 5) Interact with students on projects and research online, and
- 6) Advise on curriculum and joint research.

The honorarium will be paid by the University towards fulfilling some of the above mentioned objectives.

Looking forward for a positive and fruitful collaboration...

Best Regards ,


**Director,
School of CSE & CIT**



From,

Dr. Mallikarjun Kodabagi
Deputy Director,
School of C&IT

Date: 23.06.2022

To,

The Vice Chancellor,
REVA University.

(Through Director, International Relation)

Respected Sir,

Sub: Request to release Honorarium for faculty exchange program – Reg.

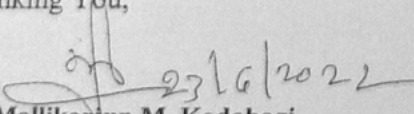
As part of faculty exchange program, **Dr. P Shivakumara**, Professor, University of Malaya has handled 16 hours of theory online sessions of “Advanced Machine Learning course of M.Tech – AI for the 1st year students. The approval for the faculty exchange program is obtained on 21.01.2022 same approval letter is attached for your reference. I request you to kindly release the honorarium as per the university norms.

Honorarium: 400\$ (25\$*16 hrs)

Account Details:

Given name: Shivakumara, Family Name: Palaiahnakote
Name of the Bank: STATE OF BANAK OF INDIA (SBI)
Account Number: 30649539746
Branch Name: SHIMOGA
IFSC code: SBIN0005619
PAN Number: FCAPS190

Thanking You,


Dr. Mallikarjun M. Kodabagi
Professor & Deputy. Director | School of C&IT
DIRECTOR

School of Computing and Information Technology
REVA University, Rukmini Knowledge Park,
Kattigenahalli, Yelahanka, Bengaluru - 560064.


Registrar
REVA University
Bengaluru - 560 064



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Review Article

Recent advances in on-site monitoring of heavy metal ions in the environment

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ABSTRACT

Excess of heavy metal ions (HMIs) in the environment has numerous adverse effects on ecology, human health and other living organisms. In recent years, this problem has raised serious concerns as a consequence of industrialization and has led to the development of devices for detection and monitoring of HMIs in the environment. Although there are various analytical tools that are used, they are expensive, tedious, difficult to handle, bulky and not portable. These issues have addressed in the development of point-of-care testing (POCT) devices that are economical, portable and easier to handle. These devices also offer the advantages of on-site monitoring of HMIs, a task that is difficult to perform with traditional devices and this helped in advancing development of point-of-care testing recent years. Therefore, this review encompasses the recent advancements in on-site monitoring of HMIs using point-of-care testing devices that are based on colorimetric, fluorometric and electrochemical techniques.

1. Introduction

Environmental pollution from heavy metal ions (HMIs) is very hazardous and is a concerning issue nowadays [1,2]. These HMIs are released into fertile soil and water bodies by different anthropogenic sources such as industries (steel, plating, metallurgy and electronics), burning of fossil fuel, urbanization and agricultural practices [3,4]. These HMIs are threat to most organisms and is treated as toxic over a certain period [5]. These HMIs enter into the human body through various forms such as the inhalation of polluted air, water sources, food intake, direct skin contact and also by occupational exposure at workplace [6]. Among the HMIs, some of the HMIs such as manganese, iron and zinc are essential to the human body for its healthy physiological activities, but excess can lead to the adverse health effects. Other HMIs such as lead, cadmium, arsenic and mercury are very toxic even at trace level and may be fatal if necessary care is not taken on time [7]. When these HMIs enter the body, the free radicals are generated which cause oxidative stress and also damage DNA, which is a key factor in the occurrence of cancer, and impairs neurons. The long exposure of the body to the HMIs these ions will stored in tissue and damages some vital

organs such as brain, liver, lungs and kidney and later causes disease in the body [8]. Hence, the HMIs level needs to be monitored and managed regularly in various food and water sources [9–13]. According to the U. S. Environmental Protection Agency's (EPA) – Office of Water (OW), the Health Advisory (HA) drinking water guidelines, the maximum limit in the case of HMIs such as Cd⁺², Hg⁺², Pb⁺² and As⁺³ are 5 µg/L, 2 µg/L, 15 µg/L and 10 µg/L respectively [14]. Therefore, the water quality must be properly maintained and it is necessary to detect them in trace levels [15]. The limits of portability, cost efficiency [16], time constraints, and difficult sample preparation that hinders their suitability for on-site analysis with traditional techniques such as inductively coupled plasma – mass spectroscopy (ICP-MS), flame atomic absorption spectroscopy (FAAS), spectrophotometry, fluorescence, atomic absorption spectrometry (AAS) and [17,18]. Fig. 1 summarizes several traditional methods of detecting HMIs.

Therefore, the need for simple, reliable, robust, and inexpensive new technologies/devices that can effectively replace the traditional technology is paramount nowadays [19]. POCT is one of the best alternatives to traditional techniques for the detection and monitoring of HMIs. POCT refers to any analytical test performed outside of the laboratory

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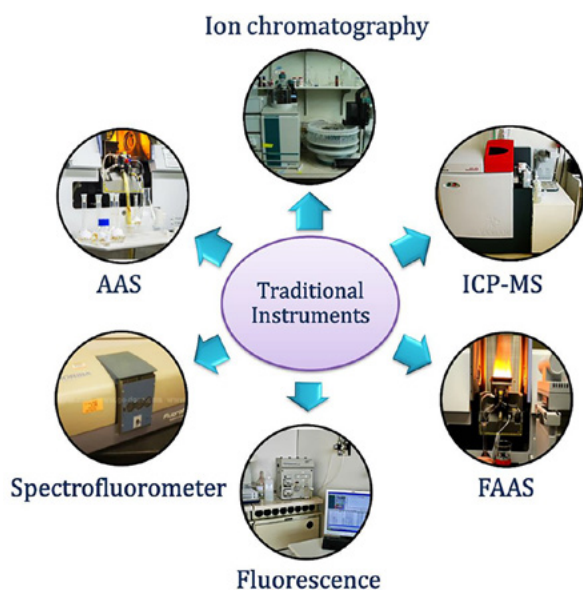


Fig. 1. Traditional techniques and their instrumentations. Reproduced with permission [114–119].

where the target is located remotely [20]. For a better overview, the differences between POCT and traditional techniques are displayed schematically in the Fig. 2A.

Recent progress [21,22] has focused on the development of the POCT devices to address the challenges of on-site and easy monitoring of HMIs in the environment. Analytes like glucose, lactate, sodium, potassium, calcium, and chloride, activated clotting time (OCT), hemoglobin, bacteria, and urine dipsticks can be analyzed with the POCT already established [23–26]. In the field of environmental monitoring, based on the high-resolution camera [27], optical sensors [26], including colorimetry [28], chemiluminescence fluorescence [29] and microcontroller based electrochemical sensors [30,31] for pollutant detection are well

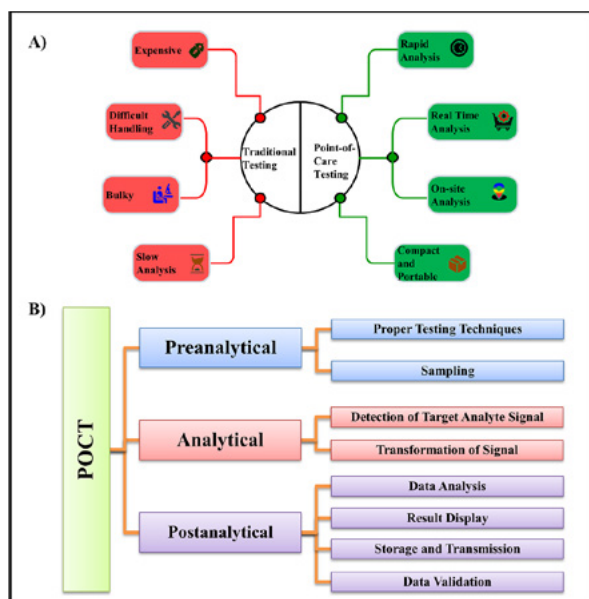


Fig. 2. A) Comparison of traditional testing techniques vs point-of-care testing. B) General phase processes in the detection of HMIs using POCT.

developed. There are three phases in POCT device [24] namely pre-analytical, analytical, and postanalytical phase. Fig. 2B shows the steps of three phases with their respective tasks.

- i) Preanalytical phase: Selection of proper testing techniques and sampling are key factors.
- ii) Analytical phase: Consists in the process of detecting the signals from the target analytes and transforming them into measurable signals using proper transducers.
- iii) Postanalytical phase: Includes data analysis, result display, storing and transmission and data validation.

Most of the previously published reviews either focus on just a single analytical technique or the many analytical techniques associated with health monitoring systems, but not for the detection of HMI. In this review, we have broadly discussed the recent advances in different analytical techniques such as colorimetry, fluorescence, and electrochemical techniques with future development perspectives of POCT for HMI Detection.

2. Techniques for on-site detection of HMIs

2.1. Colorimetry

Optical sensors play an integral role in monitoring health and safety standards as these techniques provide a relatively easy way to detecting the HMIs. The need for sensing methods that require less time, portability, cost-effectiveness and easy handling has led to the development of colorimetric methods. The general principles of colorimetry involve when the HMIs combines with color-forming chromogens, color is produced due to the different amount of light absorption. This variation of color of the sensor is directly proportional to the analyte concentration being measured [32]. The general scheme for the POCT based colorimetric detection for color image processing is shown in Fig. 3A. The color change can be observed by naked eye, but for quantitative purpose it is better to take an advantage of the technology. For instance, the smartphone camera, which consists of an image sensor and color filters, is used for color and concentration analysis. By developing an appropriate color selection application using RGB/CMYK pixels to distinguish the colors for image processing, the amount of HMI accumulation can be quantified.

This inherent need for colorimetric sensors led to the development of a colorimetric probe by Chauhan et al. [33] based on 4-hydroxybenzaldehyde and 2-amino-6-nitrobenzothiazole in same molar ratios in dimethylformamide (DMF) with a drop of glacial acetic acid by simple condensation reaction by employing a microwave. A benzothiazole Schiff base was developed which was able to selectively detect As^{3+}/As^{5+} by coordination of arsenic ion to N and S chelate of the benzothiazole derivative after which give rise to pale-yellow and color gradually changed to a dark yellow color with increasing concentration of As^{3+}/As^{5+} in less than 10 s.

Azo dyes have also found an important place in their utilization as chemosensors due to their ease of synthesis [34,35]. The introduction of azo-functionality into a chemosensor could to enhance the chromogenic ability [36]. A colorimetric chemosensor was thus developed Dhaka, et al. [37] with (E)-1-(benzo[d]thiazol-2-yl)-3-(pyridin-3-yl)diazenyl naphthalen-2-ol containing pyridine and benzothiazole moiety attached by an azo (-N=N-) linkage which is shown in Fig. 3B. This kind of chemosensor was used to detect acetate, Hg^{2+} and Zn^{2+} . The interference test of the selected cations was found to show little interference in presence of other cations. The UV-vis analysis was used for determining its sensing ability in acetonitrile (CH_3CN). An on-site assay kit was then developed for real sample analysis from filter paper and TLC plates by dipping chemosensor in H_2O/CH_3CN solution of 1 mM of Hg^{2+} turned the colorless test strip to greenish blue (Fig. 3C and 3D). Another colorimetric probe based on 4,4'-(3,7-bis(4-bromophenyl)-5,5-difluoro-

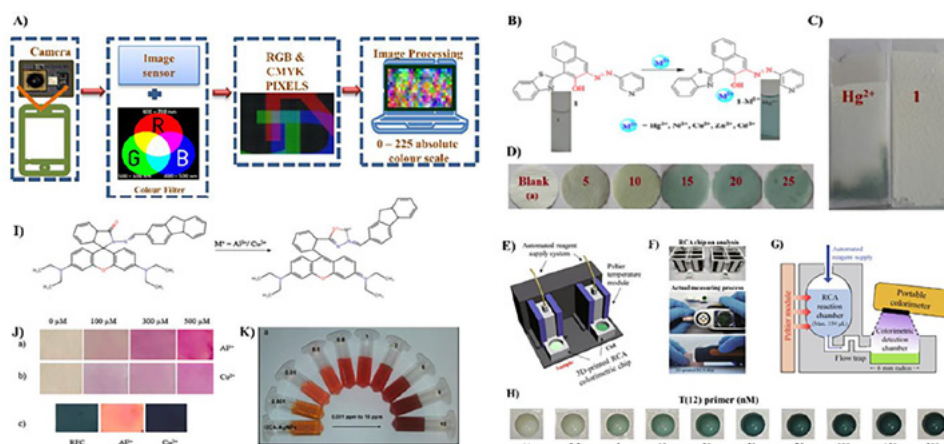


Fig. 3. A) General scheme of colorimetry process for smartphone based POCT. B) Proposed binding mode of chemosensor 1. C) Photographs of the test strips of chemosensor 1. D) Photograph of chemosensor 1 with and without Hg^{2+} . E) 3D-printed RCA device perspective image. F) Photographs of the 3D-printed RCA device. G) Cross-sectional view of the 3D-printed RCA device. H) Colorimetric reactions with different concentrations of T(12) primer. I) Proposed binding mode of RFC with Al^{3+} and Cu^{2+} . J) Colorimetric changes of test strips upon addition of increasing metal ions for a) Al^{3+} and b) Cu^{2+} . K) Colorimetric response of I2CA-AgNPs as a function of Al^{3+} ion concentration in tap

water. Reprinted with permission. [39].

5H-4λ4,5λ4-dipyrrolo [1,2-c:2',1'-f] [13,5] 1 triazaborinine –1,9-diy] bis(3-ethoxy-N,Ndiethylaniline), an Aza-BOPIDY was synthesized and used for the selective and sensitive determination of Cu^{2+} ions. The increase in the concentration of Cu^{2+} ion in the probe increase the absorbance spectra and emission responses with better analytical performances [38].

Joshi et al. developed a colorimetric probe using one pot method, and an indole-2-carboxylic capped silver nanoparticle (I2CA-AgNPs) was synthesized [39]. The colorimetric probe was employed in the sensing of Al^{3+} along with other interfering species, which exhibits detection in ppm range. The I2CA-AgNPs probe was used to test real samples from tap water and pond and colour change is showed in Fig. 3K, which shows that the Al^{3+} selectivity is not affected by the different water environment.

For instance, glutathione (GSH) is one such chelating substance with a special property whose molecules can form multiple bonds with a single metal ion which can be used to modify gold nanoparticles for sensing HMIs [42]. Such a sensor probe consisted of strip that was painted with paint made of GSH-AuNPs with polyvinylpyrrolidone (PVP) as a binder that was deposited on a mold and employed on a polyethylene terephthalate (PET) strip. When the probe when immersed in water it disperses and turns red. On the other hand, when Cd^{2+} was present in the water, the GSH-AuNPs aggregated and turned the water into blue color with exhibited insignificant changes in emission responses and change in color in the presence of other interfering ions [43].

Lim et al. also developed a disposable chip for the sensing of Hg^{2+} in drinking water. The chip was fabricated by a 3-D printing process using DNazymes produced by rolling circle amplification (RCA). Fig. 3E, F and G showed 3D printing RCA device perspective, photograph and RCA device parts for detection respectively. The reaction of DNazymes with the peroxidase substrate 2,2-azino-bis (3-ethylbenzthiazoline-6-sulfonic acid) (ABTS) caused a color change, which was recorded with a portable spectrophotometer. A thymine T(12) primer chelated with Hg^{2+} and formed a T- Hg^{2+} -T complex. The color intensity of the DNazymes decreases because RCA should trigger the reaction instead of terminating it due to the interaction with Hg^{2+} . In Fig. 3H showed that the colour change for the decreased concentrations of Hg^{2+} . [40].

Pungut et al. synthesized rhodamine fluorene based chemosensor (RFC) by a chemical condensation method using fluorene-2-carboxaldehyde and Rhodamine B as precursor, which detects Al^{3+} and Cu^{2+} by off-on switch mechanism using filter paper test strips which can be seen Fig. 3J along with binding mechanism showed in Fig. 3I

[41]. Muhammad-aree et al. designed a cost-effective smartphone-based colorimetric paper strip sensor for onsite detection of the HMI in waste water samples. This colorimetric sensor had five detection zones in which each zone was dropcasted by optimized chromogenic reagents. Then, a standard solution (Zn^{2+} , Cr^{3+} , Cu^{2+} , Pb^{2+} and Mn^{2+}) and real sample solution was dropped onto individual detection zone which are modified by different chromophores. The fabricated paper strips are exposed to multiple ions analyzed through smartphone and processed by color picker applications within 1 min [44]. The developed sensor strip shows a good repeatability and stability of 26 weeks. Table 1 summarizes all the chromophores and sensing material with their respective linear range and LOD.

Colorimetry appears promising because it does not rely on expensive instruments and provides a simple operating procedure, a high sensitivity, a low-cost method and real-time detection from a variety of HMIs. By using reagents that alter the color of the assay, it is possible to detect the presence of heavy metals in the analyte. In order to enable consumers who are not technology specialists to analyze data collected by on-site HMIs, smartphones are a very handy tool since they are integrated with point-of-care devices for data collection and analysis. Along with the advantages, some disadvantages associated with colorimetry techniques for futuristic POCT applications are: a) Detection of simultaneous multiple heavy metal ions in the target analysis. b) Stability is the important parameter to access the quality of sensor. However, some organic molecules are very sensitive to the environmental factors such as humidity and temperature, which affects the actual stability and performance of the sensor. c) Due to the demand for HMIs detection, colorimetry techniques cannot meet the requirements due to competition from other detection methods and are difficult to manufacture even on a large scale.

2.2. Fluorescence

One of the most important uses of fluorescence detection methods is to control HMIs contamination of food and beverages. Fluorescent materials are luminescent materials with a rate of emission is about 10^{-8} s, which means that their lifetime is only around 10 ns [45]. A fluorescent probe with a binding site which has to respond to a specific metal ion is a fluorophore or fluorescent dyes (polyaromatic hydrocarbons or heterocycles) that can communicate between two sites through a fluorescence mechanism to detect chemical ions [46]. Fluorescent sensors are very advantageous due to their high sensitivity [47], rapid response to analytes and simple operating technology for the detection, monitoring of

Table 1
Summary of analytical performance of sensing probe with different detection mechanisms and LOD.

Sensing probe	Sensing Techniques	Medium	HMI	Detection range	LOD	Selectivity/ Interference Study (Yes/No)	Real Sample Analysis (Yes/No)	Standard Test	No. of Samples Analyzed (n)	Trueness Recovery tests (%)	Reference
2-amino-6-nitrobenzothiazole	Colorimetric	DMSO:H ₂ O 1:1 (v/v)	As ³⁺ As ⁵⁺	5–100 ppb	7.2 ppb 6.7 ppb	Yes	Yes	–	–	–	[33]
(E)-1-(benzo [d]thiazol-2-yl)-3-(pyridin-3-ylidiazanyl)naphthalen-2-ol	Colorimetric	9:1 (v/v) aqueous CH ₃ CN	Hg ²⁺	0–60 μM	8.5 μM	Yes	Yes	–	–	87.6–105.8	[37]
4,4'-(3,7-bis(4-bromophenyl)-5,5-difluoro-5H-4,4,5,4'-dipyrrolo [1,2-c:2',1'-f] [13,5] 1-triazaborinine-1,9-diyl)bis(3-ethoxy-N,N-diethylamine)	Colorimetric	10 % acetonitrile-water mixture	Cu ²⁺	3.3–25 μM	350 nM	Yes	No	–	–	–	[38]
Indole-2-carboxylic capped silver nanoparticles	Colorimetric	Water	Al ³⁺	0.001–10 ppm	0.01 ppm	Yes	Yes	AAS	3	96–107.5	[39]
Glutathione-modified Au nanoparticles	Colorimetric	Water	Cd ²⁺	10–100 nM	18.8 nM	Yes	Yes	ICP-MS	10	103.4–117.8	[43]
3D-printed rolling circle amplification chip containing DNAAzymes	Colorimetric	H ₂ O ₂ /H ₂ O	Hg ²⁺	0–14 μg/L	2.2 μg/L	Yes	Yes	ICP-MS	3	89.8–129.9	[40]
RFC	Colorimetric	MeCN/H ₂ O	Al ³⁺ Cu ²⁺	50–85 μM 50–100 μM	0.12 μM 1.14 μM	Yes	Yes	–	10 12	–	[41]
Paper strip chromogenic reagents	Colorimetric	–	Cu ²⁺ Cu ²⁺ Mn ²⁺ Pb ²⁺	0.1–0.5 mg/L 0.3–8 mg/L 0.2–1 mg/L	0.07 mg/L 0.17 mg/L 0.11 mg/L 0.03 mg/L 0.63 mg/L	Yes	Yes	ICP-OES	7	87–107	[44]
HL	PET	Ethanol	Al ³⁺	0–40 μM	2.72 nM	Yes	No	–	1	–	[61]
Organic probe R	CHEF	DMF	Al ³⁺	1–1000 nM	0.2 μM	No	No	–	1	–	[70]
CdSe/ZnS QDs modified optical fibre	Quenching	PBS	Hg ²⁺	0–50 μM	1 nm	Yes	Yes	AFS	5	–	[81]
Zn-MOF	CHEF (complex formation)	DMF	Al ³⁺	0.05–50 μM	30 nM	No	No	ICP	1	–	[52]
NBDX	Quenching (complex formation)	Methanol	Hg ²⁺	0–10 μM	0.01 μM	Yes	Yes	ICP-MS	1	92.8–99.1	[77]
[2, 2'-((6-((phenoxycarbonothioyl)oxy)naphthalen-2-yl)methylene)bis(sulfaneyldiacetic acid) carbon dots (CDs) doped hydrogel	Quenching (Non-radiative)	Ethanol/Aqueous	Hg ²⁺	5–1000 nM	4 nM	Yes	Yes	–	3	–	[63]
CdSe/ZnS quantum dots (QDs)	Cation Exchange	Na ₂ Cit /Aqueous	Hg ²⁺	0–10 μM	0.80 nM	Yes	Yes	–	3	80–120	[67]
Dicoumarin-Hg	PET	EtOH/Aqueous	Hg ²⁺	75–185 nM	85.25 nM	Yes	Yes	–	1	–	[76]
poly-A DNA strand (CY-A14)	FRET	–	Hg ²⁺	–	8.5 nM	Yes	Yes	–	3	79.8–111.4	[84]
rGO/SMOF/PET/SPCE	Differential Pulse voltammetry	–	Cd ²⁺ Pb ²⁺ Cu ²⁺ Hg ²⁺	0.50–12.5 μM 0.10–12.5 μM 0.10–9.5 μM 0.5–12.5 μM	0.21 μM 0.121 μM 0.229 μM 0.537 μM	Yes	Yes	ICP-MS	7	88–147	[30]
BI/MWCNT-IL/SPCE	Square Wave Anode Stripping Voltammetry	–	Cd ²⁺ Pb ²⁺	1–60 μg/L	0.5 μg/L 0.12 μg/L	No	No	AAS	–	95.9–100.1	[86]
Bi-film-modified glassy carbon electrode	Square Wave Anode Stripping Voltammetry	–	Cd ²⁺ Pb ²⁺	0–50 μg/L	1.5 μg/L 2.4 μg/L	Yes	Yes	–	–	–	[93]
BITF	Square Wave Anode Stripping Voltammetry	–	Cd ²⁺ Zn ²⁺	–	0.01 mg/ Kg 0.01 mg/ Kg	Yes	Yes	ICP-OES	–	–	[105]
GATF	Square Wave Anode Stripping Voltammetry	–	Pb ²⁺ Cu ²⁺ Hg ²⁺	5–300 μg/L	0.015 mg/ L 1.3 mg/L 0.002 mg/ L	Yes	Yes	ICP-OES	–	–	[107]

H.N. Noyan Kumar et al.

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the environmental, biological and disease detection [48]. In 1867, F. Goppelsroder was the first to report a fluorescence chemosensor for the determination of (Al^{3+}) with morin chelate which led to the development of many other modern fluorescence sensors [49].

The main mechanisms in chemosensors are: chelate-induced enhanced fluorescence (CHEF) [46], aggregation-induced emission (AIE) [50], intramolecular charge transfer (ICT) [51], quenching [52], photo-induced electron transfer (PET) and resonance energy transfer (RET) [53,54]. The quenching again consists of three types named as (i) dynamic, (ii) static and (iii) inner filter effect (IFE). Among these PET and RET mechanism principles are discussed here. Rest of the mechanism were discussed in the following respective sections.

Photoinduced electron transfer (PET): The PET phenomenon is widely used to develop fluorescence sensors. In a typical PET sensor an aromatic fluorophore is covalently bonded to an aliphatic amine. If the amine is not protonated, it will quench the fluorophore. Protonation of the amine reduces its ability to donate an electron, so that the fluorescence intensity increases. Sometime PET leads to *quenching*. The quenching of a fluorophore results from diffusive collision between the fluorophore and quencher and the quenching process can be described as, $I_0/I = 1 + K_{SV}[Q]$ (Eqn. 1) by the Stern-Volmer equation [55] where I_0 & I are the fluorescence intensity in the absence and presence of metal ion, K_{SV} is the Stern-Volmer constant and $[Q]$ = the concentration of the metal ion.

Resonance energy transfer (RET): Sometimes called fluorescence resonance energy transfer (FRET), provides an opportunity to measure the distances between sites on macromolecules. Förster distances are typically in the range of 15 to 60 Å, which is comparable to the diameter of many proteins and to the thickness of membranes. The extent of the energy transfer is determined by the distance between the donor, the acceptor and the extent of spectral overlap. The rate of energy transfer

$K_T(R)$ is given below by equation (2) and the efficiency of energy transfer is given by equation (3).

$$K_T(R) = \frac{1}{\tau_D} \left(\frac{R_0}{r} \right)^6 \quad (2)$$

$$E = \frac{R_0^6}{R_0^6 + r^6} \quad (3)$$

Where, r is the distance between acceptor and donor, R_0 is the Förster distance and τ_D is the donor life time in absence of energy transfer.

Different studies were carried out using metal organic frameworks (MOFs) where the central metal atom of MOFs is linked to a group of organic linkers via a coordination bond [56], so that they can be used in many applications such as chemical sensors [57], for the detection of anions [58], organic molecules and the pH value through Lewis base centers [59], which interacts precisely with the target through molecular interactions such as coordination bonds or hydrogen bonds in order to generate fluorescent signals. As an example, to detect methanol and Al^{3+} by using Zn-MOF [52] used above principle, which was prepared by ultra-sonication method [60], with dual open Lewis base centers, namely $[Zn(NH_2-bdc)(4,4'-bpy)]$ (where NH_2-H_2bdc = 2-amino-1,4-benzenedicarboxylic acid and bpy = 4,4'-bipyridine) which would facilitate guest host interaction with the complex formation between uncoordinated oxygen from C=O and nitrogen from $-NH_2$ groups of Zn-MOF to Al^{3+} LOD of 30 nM which resulted in fluorescence signal. Due to the steric hindrance of the $[Zn(NH_2-bdc)(4,4'-bpy)]$ the LOD was less. Further the LOD is increased to 2.72 nM by Yue et al. synthesized MOF chemically 2-pyrrolicarbaldehyde-(3-hydroxy-2-naphtho) hydrazone (HL) that showed high selectivity and sensitivity towards Al^{3+} in alcohol medium which was confirmed by the color changed from colorless to pale yellow at 275 and 415 nm which is depicted in Fig. 4A and also it

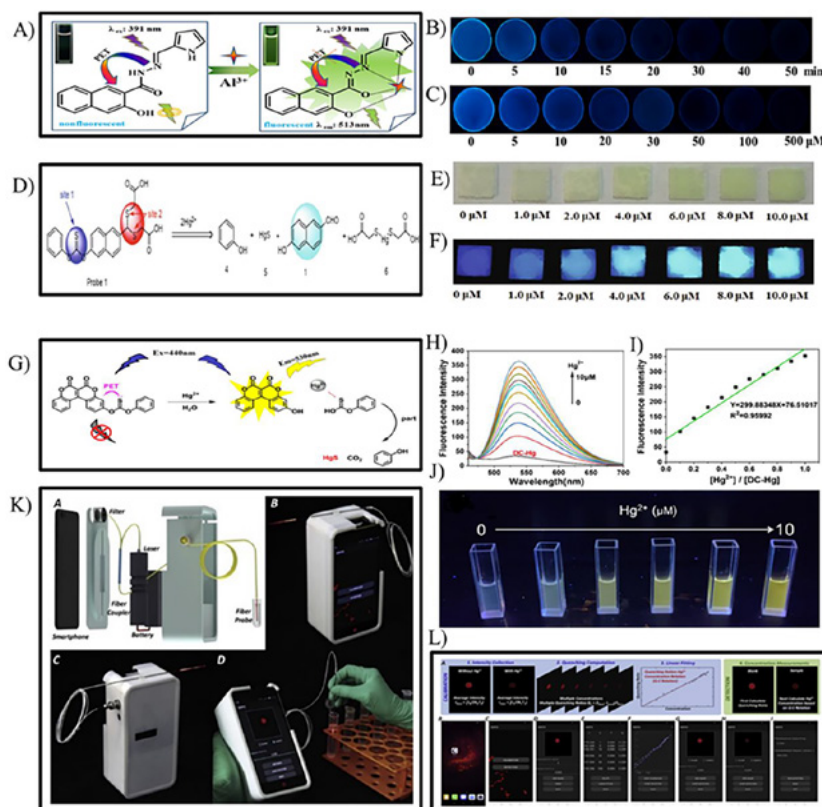


Fig. 4. (A) Sensing mechanism of Al^{3+} using HL. Reproduced with permission [61]. (B) The CP-CD hydrogels in $100 \mu M Cr^{+6}$ solution at different time interval. (C) The CP-CD hydrogels in presence of different concentrations of Cr^{+6} . Reproduced with permission [64]. (D) Probe-1, the desulfurization process. (E) Photograph of the test strips with Hg^{2+} under natural light. (F) Photograph of test strips with Hg^{2+} under UV light at 365 nm. Reproduced with permission. [80]. (G) Reaction mechanism of probe (H) DC-Hg reacted with Hg^{2+} . (I) Hg^{2+} concentration and fluorescence intensity relationship. (J) Visual observation of DC-Hg reacting with Hg^{2+} under UV light. Reproduced with permission [76]. (K) SOFFS hardware design: (A) Design sketch of SOFFS. (B)-(C) Device photos of SOFFS. (D) SOFFS in applications. (L) Flow chart of Hg^{2+} detection. Reproduced with permission. [81].

shows how the $\pi-\pi^*$ electron transitions of naphthalene ring containing, the oxygen atoms of the hydroxyl group, the carbonyl group and the nitrogen atoms of the imine group coordinated with the Al^{3+} [61].

Due to lengthy synthesis procedure and the instability of MOF with impurities research has been focused on synthesis of carbon dots. Due to excellent stable fluorescence, biocompatibility, less toxic and good solubility in water the carbon-based carbon dot (CD) are more suitable. [62]. The design of optical waveguides of the carbon dot (CD) incorporated into hydrogels coupled to a portable, photonic device for selective real-time and on-site detection of Hg^{2+} showed by Guo et al. [63]. The fluorescent carbon dots were produced by a hydrothermal process using citric acid with an average diameter about 7.5 nm were incorporated in hydrogel. The fluorescence spectrum was obtained by a quenching mechanism which was attributed to the non-radiative electron transfer from the excitation of the d-orbital of Hg^{2+} at 405 nm.

Qiu et al. [64] synthesized carbon dots from rice fried *Codonopsis pilosula* (traditional Chinese medicine with multipurpose uses [65,66] by a simple one-step solvent extraction process at room temperature. The developed carbon dots have been employed for sensing Cr^{6+} in industrial waste sample, by virtue of the synthesized carbon dots inner filter quenching property, held responsible for fluorescence change at different concentration of the analyte which is shown in Fig. 4B and C. Wang et al. [67] synthesized CdSe/ZnS QDs and observed an improvement in fluorescence upon addition of Hg^{2+} . This increase was caused by an evanescent wave which excites the QDs, the detection being carried out by means of fiber nanoprobe in real time by EWOFF (evanescent wave optofluidic fluorescence platform). The QDs non-radiative decays in the ZnS shell were caused by exciton recombination through passivation of dangling bonds and defect states on the core surface [68,69]. The cation exchange had the following process: (1) diffusion of Hg^{2+} through the solvent to CdSe/ZnS QDs on the nanoprobe fiber (2) diffusion of Hg^{2+} through the $\text{Hg}_x\text{Zn}_{1-x}\text{S}$ layer (3) exchange reaction at the ZnS/ $\text{Hg}_x\text{Zn}_{1-x}\text{S}$ interface, (4) diffusion of Hg^{2+} through the $\text{Hg}_x\text{Cd}_{1-x}\text{Se}$ layer and (5) exchange reaction at the $\text{Hg}_x\text{Cd}_{1-x}\text{Se}$ interface.

Mahalakshmi et al. [70] synthesized an organic probe consisting of multiple ligating sites called the Probe R via chemical process using 2-hydroxy-1-naphthaldehyde and 2-amino-8-quinolinol as precursor that can be used to sense Al^{3+} through turn-on fluorescence in an aqueous living cells. The highly Al^{3+} selective R probe showing fluorescence intensity at 453 nm after addition due to the chelation of the deprotonated -OH group, which restrict azomethine free rotation, resulting in chelation-enhanced fluorescence (CHEF) [71,72]. This probe was stable in both acidic and basic medium during absence and presence of Al^{3+} . These tests were also measured using logic gates which are prevalent in chemical and biological sensing [73]. A plant derived compound Coumarin having carbonyl group was established itself as a best fluorescent probe dye [74,75]. Jiang et al. [76] prepared coumarin based fluorescent material by using 3-hydroxybiscoumarin and phenylthiochloroformate at room temperature, a fluorescent probe DC-Hg (Dicoumarin-Hg) was synthesized and characterised by ^1H NMR. The detection was based on the PET based 'turn-on' fluorescence process where the color changed from colorless to yellow for a fluorescence emission intensity at 530 nm. The mechanism of detection was attributed to the binding of Hg^{2+} to S atoms of DC-Hg in aqueous solution, with 85.25 LOD, as shown in Fig. 4G. In Fig. 4H, the reaction of DC-Hg with Hg^{2+} is shown. The relationship between Hg^{2+} concentration and fluorescence intensity are shown in Fig. 4I and the visual observation was shown in Fig. 4J.

Bhatt et al. [77] prepared chemically, a molecule integrating two units of 7-nitro-benzoxadiazole (NBD), which was bound to m-xylylenediamine termed as NBDX and doped with Agarose Hydrogel Film (NBDX-HD) as a sensor, which was carried out in a methanol medium, in order to detect Hg^{2+} is a toxic metal in all its oxidation states [78,79] The -NH protons were deprotonated and the complex was formed between anionic NBDX and positive charged Hg^{2+} ions which leads to quenching effect, which resulted in emission of fluorescence with LOD

10 nM. In UV-vis it showed a change in intensity at 545 nm with a color that changed from yellow to red. To increase the stability and the LOD Wu et al. developed the fluorescent Probe 1, namely [2,2'-(((6-(phenoxy-carbonothioyl)oxy)naphthalen-2-yl)methylene) bis (sulfanediy)) diacetic acid] for the detection of Hg^{2+} with fluorescence in the wavelength of $\lambda_{\text{ex}} = 300$ nm, $\lambda_{\text{em}} = 428$ nm. This fluorescent probe was found sensitive to mercury ions and the increase in mercury concentration was indicated by the change in color from yellow-green in the solution of Probe 1, which was observed under UV lamp (365 nm). Fig. 4D shows, the mechanism of detection revolved around the desulfurization of Probe 1. The sulfur group present in probe 1 at detection site 1 and site 2 binds with mercury and generated byproducts like phenol (product 4), 6-hydroxy-2-naphthaldehyde (product 1), HgS (product 5) and bis (carboxymethylthio) mercury (product 6). The mechanism was confirmed by high-performance liquid chromatography (HPLC) and Mass Spectroscopy (MS). The photograph of test strips under natural and UV light is shown in Fig. 4E and F respectively [80].

Due to the rapid growth in technology of mobiles, smartphone-based sensor was in the lime light of research. Liu et al. for the detection of Hg^{2+} on site [82,83] synthesized a quantum dot (QD) modified optical fiber (CdSe/ZnS QDs) by surface modification by (3-Aminopropyl)triethoxysilane (APTES), N-(3-Dimethylaminopropyl)-N'-ethylcarbodiimide hydrochloride (EDC), N-Hydroxysuccinimide (NHS) and bovine serum albumin (BSA) was used. The evanescent waves are used in optical fiber. SOFFS hardware design, its photos and applications are shown in Fig. 4K. In order to detect the Hg^{2+} fresh and sea water samples, the fabricated QD modified combination tapered fiber probe should be connected to SOFFS through the fiber flange, and with the developed smartphone application, the quantitative fluorescence quenching can be calculated [81]. The application flow diagram, calibration diagram, application icon, and its user interface are shown in Fig. 4L.

Zhou, Y et al. developed a portable evanescent wave optofluidic biosensor (EWOB) for on-site detection of Hg (II) ions was developed by using signal reporter and bio recognition agents like poly-A DNA strand (CY-A14) and quencher labeled poly-T DNA strand (BQ-T14) was used respectively to detect Hg^{2+} . The fluorescence signal is due to the thymine deprotonation took place and detection process of Hg^{2+} involved the interaction between the Hg^{2+} and T-T mismatch structure based on the FRET. The CY-A14 and BQ-T14 strands of the DNA hybridize to form a double strand structure. The real samples were also studied tested with a precision of 4 % RSD for tap water [84].

Perspectives:

- To detect any heavy metal ion there must be nucleophilic center for the complexation to takes place.
- Due to the presence of different electrophilic functional groups, the organic molecules act as very good sensor materials.
- Stability and reproducibility are the biggest issue in the sensor technology which can overcome by using the quantum dot-based materials.
- Smartphone based sensor requires an ideal material with high reproducibility and stability.
- MOF (metal organic framework) has not been used in fluorescence-based sensors.
- Flexible portable devices are still a challenging task in fluorescence-based sensors.

The fluorophore materials and their corresponding fluorescence mechanism with their respective LOD are summarized in Table 2. The fluorescent probes, organic dyes, MOF and quantum dots can be utilized for the detection of HMIs. Among these materials the QDs performance are best by exhibiting lowest LOD in lower concentration range. These fluorescence techniques are evolving at a rapid pace. In fluorescence sensing techniques, some of the process of fluorescence is still not well understood. The fluorophores may work well but it may fall short due to

the required selectivity and specific applications according to the requirements. There is wide scope in developing fluorophores, which are user specific target material.

2.3. Electrochemical sensors

The electrochemical methods are the most effective for detecting and analyzing HMIs because they are rapid, highly sensitive and inexpensive [85]. Electrochemical sensor generally uses three-electrode system that consists of a counter electrode (CE), a reference electrode (RE) and a working electrode (WE) [86]. Working electrodes acts as a sensing platform for the detection of HMIs [87]. Numerous working electrodes have been used for detection of HMIs [88–90]. In past decades, mercury-based electrode (hanging drop thin film) [91] have been used and later replaced by chemically modified working electrodes due to mercury toxicity [92], strong adsorption on the working electrode surface and calomel formation in chloride medium [93]. In recent years, for the design of portable electrochemical sensor, screen-printed electrodes (SPEs) [94] have begun to make room for the role of sensor. Many types of SPEs have been used as sensor element modifying substrate including mercury-coated SPEs [95], bismuth-coated SPEs [96], gold SPEs [97] and gold and/or carbon nanostructured SPEs [98]. Some general examples for the fabrication of SPEs are given in Fig. 5A, which is showing the development steps involved in SPEs. Fig. 5B, shows the schematic

view and photographed image of SPEs after development.

For HMIs analysis, anodic stripping voltammetry (ASV) [99] has emerged as a versatile and powerful method. When coupled with a pulsed scanning technique such as differential pulse voltammetry (DPV) [94,100] or square-wave voltammetry (SWV) [101], detection limits of the order of 10^{-10} M are achievable [102]. When choosing the method of scanning, square-wave anodic stripping voltammetry (SWASV) [103] proved to be superior to differential pulse anodic stripping voltammetry (DPASV), offering increased peak heights and allowing to scanning at much faster scan rates ($V s^{-1}$ range) [104]. The general input voltammetric pulses of DPV and SWV is shown in Fig. 5C and D. In both techniques, the deposition and stripping steps are common [102] which is shown in Fig. 5E and F.

These smartphone based devices have been extensively studied for their advantages, such as user-friendliness, miniaturization, fast and ease of use [5]. In this regard, Xu et al. [30] have developed a module for HMI detection of by using DPV and a smartphone programmed with voltammogram that provides users with a real-time parameter analysis graph. Here the working electrodes are modified SPCEs with rGO/SMOF/PEI, which is connected to the POCT interfaced with smartphone is shown a Fig. 5G and H. Fig. 5I shows the diagram of communication between the portable device with smartphone. The modified SPCEs with rGO/SMOF/PEI showed very good analytical performance showed in Fig. 5J and K. The LODs have been calculated by 3σ formula and

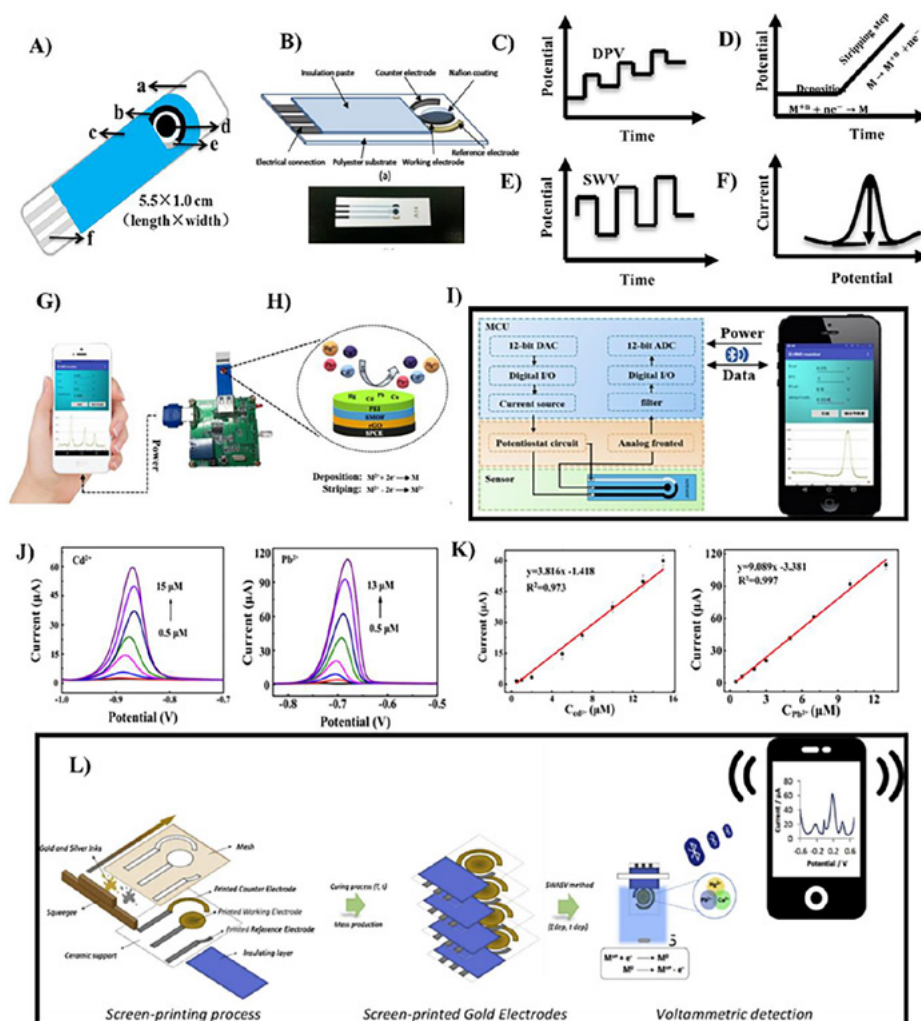


Fig. 5. A) Development steps and representation of a SPE. (a) inert solid substrate; (b) counter electrode; (c) insulator layer reference; (d) working electrode; (e) electrode; (f) conducting paths. Reproduced with permission. [106]. B) Schematic view of the fabricated SPE and the photograph of the SPE sensors and the photograph of the fabricated SPE. Reproduced with permission [86]. C) Differential pulse voltammetry form D) Square wave voltammetry E) Anodic stripping voltammetry F) Resultant voltammogram. G & I) System schematic diagram of connection of Potentiostat to mobile phone. H) The handheld device can implement two-way communication with a smartphone and perform DPV measurements. J) DPV response of the sensor for Cd^{2+} and Pb^{2+} . K) Concentration vs current plot for Cd^{2+} and Pb^{2+} . Reproduced with permission [30]. L) Fabrication process of screen-printed gold electrodes and detection principles of heavy metals in water. Reproduced with permission [107].

reported in Table 1. The LODs are compared with recommendation values provided by the ministry of ecology and environment of China, it was reported that LODs are lesser than the guideline values. Mc Eleney et al. developed a SPE with graphitic modification with bismuth thin film (BiTF) and gallium thin films (GaTF) matrix for the detection of Cd and Zn extracted from real sample soil. Cd²⁺ was detected using BiTF at pH 4.6, and Zn²⁺ was determined with GaTF at pH 5.1. The graphitic carbon nitrate was synthesized by heating urea at 650 °C at a heat ramp of 20 °C min⁻¹. The LOD are evaluated and reported as 0.01 mg/Kg for both Cu⁺² and Zn⁺², which was assessed with inductively coupled plasma-optical emission spectroscopy (ICP-OES). Interference studies are analyzed for Cd⁺² detection, Cd⁺² endures low bioavailability so consequently often prone to interference. The analyzed real sample consists of organic stuff (about 13.6 %) and Al⁺², Mg⁺², Fe⁺², and Mn⁺². It was conveyed that calculated values grasp a decent agreement between SWASV and ICP-OES for Cd⁺² with a mean error of 1 % [105].

In order to determine Cd²⁺ and Pb²⁺, Wang et al. explored a portable electrochemical workstation using disposable SPCE. This SPCE was modified with multi-walled carbon nanotube (MWCNT), ionic liquid (IL = *N*-octyl pyridinium hexafluorophosphate) and then reduced with a bismuth film (BI) in situ (BI/MWCNT-IL/SPCE) [86]. The established module, a virtual instrument consists of three important components: a) electrochemical cell, b) potentiostat circuit and c) USB interfered DAQ card which is developed by the LAB view software program which generates SWV signal, collects the data of voltage and corresponding current, and then processes and transmits it to the computer. On the one hand, this device was characterized by its compactness, being easy to transport and use in the field. Secondly, it was easy to use, energy-saving, and easy to maintain. Third, the experimental results obtained by the module system had an excellent consistency with the AAS result.

Excessive mining activities in remote zones of the Amazon result in water pollution with HMIs. In this regard, successfully developed and demonstrated an affordable, portable diagnostic device for rapid (analyzes within 60 s) monitoring and detection of HMIs in Amazon river water without any further treatment [107]. The fabrication schematic of the screen-printed gold electrodes and the detection mechanism of the sensing tool is shown in Fig. 5L. The data was acquired with the portable potentiostat and transferred to a mobile device via a wireless connection. The HMIs such as Pb²⁺, Cu²⁺ and Hg²⁺ have been detected simultaneously by electrochemical techniques. The concentration of the electrolyte (i.e. Hydro Chloric acid) has the significant influence on the detection current of Hg²⁺ since this requires hydrochloric acid in solution to promote its accumulation onto the electrode surface. Also, the sensors were tested in high temperature and humidity conditions of the Amazon river water and results were validated the results using standard ICP-OES. The LOD, calibration range is given Table 1.

The recent electrode for electrochemical detection is summarized in Table 1. The electrochemical detection offers variety of advantages. The development of suitable electrodes and microelectrodes like SPEs are the key factors for the sensitive determination of HMIs in electrochemical techniques. The SPEs can be developed in small size, cost-effective way. SPEs requires very less quantity of analytes as compared to other techniques. In electrochemical detection, SWV is most widely used due to its sensitivity. The electrochemical techniques offer a variety of advantages. Easy to detect simultaneous detection of HMIs in the real samples. It requires a very less time for the analysis of HMIs. Most suitable for large scale production which meets the demand of commercialization.

2.4. Method validation of the techniques

Method validation is the process of defining an analytical requirement, and confirming that the method under consideration has performance capabilities consistent with what the application requires [108]. For quality assurance, method validation is the key step in any analytical methods. Several laboratories everyday run a number of tests, measurements and analysis of the measurements. The cost of these

measurements in the laboratory are high so it is very important to perform these measurements carefully and accurately. The duty of an analyst is to validate the correct and most efficient method, which is an essential part of the measurements [109]. Among the many protocols to validate and assess the performance of the sensor, the following parameters and method protocols should considered [110]:

- a) Selectivity.
 - b) LOD.
 - c) Calibration (linearity).
 - d) Precision.
 - e) Trueness.
- a) Selectivity: Selectivity also termed as specificity is how accurately the sensor can able to detect specific analyte in the presence of other interference [111]. IUPAC uses the term selectivity to avoid confusion with diagnostic specificity. This is also an interference analysis. That is, in a mixture of matrices, how well each the analyte is analyzed. This particular parameter is not only used to assess the selectivity of a particular analyte, but also gives an idea of the interfering effect of the analyte in the presence of other mixtures of materials.
- b) LOD: The limit of detection represents the minimum concentration at which the presence of the analyte can be distinguished from its absence with a high statistical probability. For the LOD detection, 3σ formula is used based on signal to noise (S/N) ratio which is approximated to 3. There is lot ambiguity in considerations with formula for the calculation of LOD. According to golden book of IUPAC, the limit of detection, expressed as the concentration, C_L, or the quantity, Q_L, is derived from the smallest measure, x_L, that can be detected with reasonable certainty for a given analytical procedure. The value of x_L is given by the equation $x_L = \bar{x}_{bi} + ks_{bi}$, where \bar{x}_{bi} is the mean of the blank measures, s_{bi} is the standard deviation of the blank measures, and k is a numerical factor chosen according to the confidence level desired. Furthermore, one should not ignore the two types of errors associated with the definition of LOD being considered. The two types of errors are Type 1 (false positive) or Type II (false negative) error in the measurements. Along these considerations, LOD is also affected by the instrument and analytical method used. Hence now a new approach called as upper limit approach (ULA) is used by considering the error. The new Upper Limit Approach, ULA, calculates the upper confidence limit of an individual blank signal using a critical value of the t- distribution and residual standard deviation of regression. If the calibration plot is assumed to start from zero then this approach is ULA1 and if it is non-zero calibration plot then this approach is called ULA2 [112]. Even though one can obtain a very low LOD using 3σ method but there is a chance of getting Type II error when measuring the lower concentration close to the LOD. Conversely, the new method ULA1 approach reduces the risk of making any decision error but one can obtain a high LOD values.
- c) Calibration (linearity): Linearity is a measure of the method's ability to provide a linear response across the intended range of the method. For a sufficient calibration range, the assumption of constant population variance of the signal is not valid which inference the standard deviation increases as the concentration increases. Hence the calibration range should be chosen wisely. Typically, the concentration range should be 1 to 1.5 log units above LOD values which is approximately 10 to 30 times the LOD. In the selected range, if the concentration has a central tendency in between the calibration range will be very beneficial while construction and analysis of calibration plot and also it is best to consider at least seven different concentrations (including blank) with at least one or more duplicate measurement so that at the end its very easy to calculate and compare the accuracy of the calibration model.
- d) Precision is a measure of the method's ability to reproduce a measurement or result and it can include elements of instrument

precision, repeatability, and reproducibility. By increasing the number of measurements, the precision of a measurement can be improved. In reproducibility, more uncertainties can be expected than in the repeatability. According to Horwitz's studies, the precision is depending on the analyte concentration range. If this concentration range is small then relative standard deviation (RSD) value is high [113].

e) Trueness: Trueness is an expression of how close the mean of an infinite number of results (produced by the method) is to a reference value. There are different approaches of trueness. Here trueness is calculated by spiking and recovering technique. In practice, the recovery levels between 80 and 110 % are acceptable.

It is important to adopt these tools to validate the sensor performances. It is best practice to repeat the measurements and then compared it with other measurements to know about accuracy, repeatability, reproducibility and error graph in calibration plot. At least 10 replications are preferred in validation procedure. While representing the result, one should not ignore the importance of statistics. For an instance, in calculation of LOD, it is best practice to take at least 20 blank samples because if the number of samples are more, then the standard deviation becomes less and hence one can expect lower LOD. During recovery tests, spiking of an analyte of interest have been used. These solutions/real samples may already contain the analyte of interest so the care must be taken to ensure the spiking does not lead to analyte levels outside of the working range of the method.

3. Conclusion and future perspective

Recent advances in the detection of HMIs using point-of-care test equipment using colorimetric, fluorescence and electrochemical techniques have been reviewed. The ever-increasing population and environmental pollution generally lead to adverse effects in human health as well as other living organisms due to the ever-increasing level of HMIs in the environment. Traditional methods of HMI detection have needed to be replaced and modified to better serve people and their interests. In this regard, the emergence of POCT devices is a boon and should be carefully considered as a reliable detection of HMIs in the environment. According to literature reports to date, POCT devices offer advantages in terms of cost, portability, handling, maintenance, being much more convenient than traditional devices. The miniaturization of these devices offers a wide range of advantages with easier monitoring, assessing and possible treatment of HMI pollution in different locations. Pathways are also open up for monitoring HMI levels in the environment as well as for testing the quality of food, water and land.

Furthermore, with the help of the global positioning system, the geospatial distribution of regions with high levels of HMIs can be tracked, documented and shared to provide awareness and constant information to stakeholders and even to possibly remediate them. The HMI detection interface of portable devices such as such as laptops, tablets and smartphones can provide reliable and fast information in areas where resources are limited. However, there are still some major limitations to overcome in order to push this technology forward. Among them is the construction of reliable sensor materials that possess excellent signal-to-noise ratio, selectivity, specificity, sensitivity, stability (which directly affected by atmospheric humidity and temperatures), reproducibility, and repeatability. This particular challenge can be addressed by exploration of novel probes, dyes, polymer composites and metal-based materials that are highly specific. The development and design of algorithms for data processing and analysis are also key factors that have to be addressed. Considering these features and challenges that come with the development of POCT devices, we consider that all these aspects can be a crucial game changer in ensuring safety and providing data to policy and decision makers. The future of POCT looks promising it may reduce the complexity that comes with sample preparation, handling and data interpretation.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

No data was used for the research described in the article.

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Advanced strategies for hydrogen generation by rhodium metal catalysts coated by the electrodeposition method

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ABSTRACT

The theory and kinetics of the hydrogen evolution reaction (HER) on electrodeposited rhodium in acidic media (0.5 M H₂SO₄ solution) were looked into. An electrodeposition approach using direct current (DC) and pulse current (PC) was used to deposit rhodium on a stainless steel 304 (SS304) substrate. Several parameters, including rhodium concentrations, current densities, temperature, pH, and coating duration, were used to optimise the rhodium bath. Scanning electron microscopy (SEM), X-ray diffraction (XRD), and energy-dispersive X-ray (EDX) analyses were used to assess the change in surface shape and chemical composition. The best coating was demonstrated at PC 75% duty cycle with an optimised current density of 4.0 A/dm², which was better than the remaining PC cycles and DC source coating, indicating the most productive activity for hydrogen production. The activity of Rh catalyst coatings resembled that of pure platinum metal. Cyclic voltammetry (CV), chronopotentiometry (CP), and potentiodynamic polarisation techniques were studied to determine the HER. The results obtained from the PC technique with a 75% duty cycle give more HER performance.

1. Introduction

As a result of increasing public attention to the major environmental risks posed by the widespread use of fossil fuel sources, a deal was reached to transition to an energy system that relies on cleanliness, safety, and recycled materials [1–2]. Hydrogen energy is an attractive future energy carrier since it can be created easily and without producing any greenhouse effect [3–6]. Despite being the most prevalent element in the universe's elements, in nature, hydrogen isn't found in its purest form. In this context, the production of low-cost, environmentally friendly hydrogen from renewable energy sources is becoming increasingly important. Water is a valuable source of hydrogen, and water electrolysis is the most common method of obtaining hydrogen from it [7–8].

The HER has already been examined in both acidic [9–11] and

alkaline [12–13] solutions, as well as its dependence on pH and temperature effects. Several electrode materials have been used to investigate HER, including Hg, Rh, Pt, Au, Sn, Cu and Ag [14–17]. It is widely available that increasing any material's surface area can be calculated in general to improve its cathodic efficiency through a synergistic combination of multiple parts engaged in it [18–19]. Moreover, the electrocatalytic productivity of any substance is mostly determined by the metal surface's binding energy with adsorbed hydrogen [20–21]. Based on the preceding, catalysts based on noble metals have already been used as effective HER electrocatalysts [22–23].

The first electrodeposition of rhodium plating was demonstrated by Marino in 1912 [24]. According to Cinamon, sulphate and phosphate baths are used for rhodium coating [25]. Rh is very corrosion resistant due to its association with the platinum group of metals. In our research work, we achieved coating using PC and DC techniques. The main

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reason for selecting PC over traditional DC plating is to avoid the continuous entry of current into the bath, which leads to burning deposits or uneven coating. This led to the PC becoming popular in recent times. Pulse coating also leads to fine grain size deposition by varying the current T_{ON} and T_{OFF} formulas. For more than a decade, PC coatings have been used in industries like aerospace, shipyards, and auto manufacturing [26–27]. Catalytic metals, especially Cu, Zn, and Al mixed oxides, are frequently used in chemical engineering and pollution control [28–29]. The presence of catalytically active transition metal species (e.g., Cu, Co, Fe, Ni, V, Rh) allows for easy separation of the end products [30–31].

In this paper, Rh has been coated on SS304 by electrodeposition. Pt is always superior. We tried with Rh, to know its ability and get an idea of Rh's comparison to Pt [22]. The prepared Rh specimens were characterised by SEM, EDX, AFM and XRD. HER performance was accessed by LSV, Tafel and Chronoamperometry techniques.

2. Materials and techniques

2.1. Rhodium coating

The rhodium bath was optimised to coat the rhodium on an SS304 substrate. Even though rhodium is cost-effective, the availability of Rh on the steel surface is very low, and hence the cost of Rh in the study can be controlled. The amount of Rh deposited on the substrate is $0.5 \mu\text{gcm}^{-2}$. The bath's composition and working requirements are presented in Table 1. The rhodium sulphate solution ($\text{Rh}_2(\text{SO}_4)_3$) was supplied by Arora Matthey Limited, Kolkata. Using a pH metre (HI2020 edge pH meter, HANNA, USA), the bath pH was kept at 1.3 by adding H_2SO_4 as needed. All depositions were performed at a temperature of 45°C . Electrodeposition was performed on a specified surface (1.76 cm^2) of the polished (abrasive sandpaper of many grades ranging from 80 to 1800 scale) SS304 substrate (15 mm in diameter and 1 mm in thickness). The anode was made of insoluble platinised titanium (Ti anode fabricators private limited, Chennai, India) [32]. During plating, the electrodes, anode and cathode, were placed at a distance of 3 cm apart. The experiment was carried out in a 100 mL capacity beaker (rhodium solution and H_2SO_4) designed electrochemical cell and a power source (Agilent N6705A DC Power Analyser, USA). All depositions were recorded and completed in 20 minutes under continuous conditions. The coatings were rinsed and dried under distilled water. Various instrumental tools were used to examine the deposited coatings for surface morphology and compositional information.

2.2. Characterisation

The surface morphology of the rhodium coating was analysed using SEM ((model: FESEM Carl ZEISS), interfaced with EDS (model: Oxford Nanoanalysis 250). The surface morphologies of coated materials have been described using atomic force microscopy investigations (model: Nanosurf® EasyScan 2 AFM & STM) to confirm the evidence of other research methods. X-ray diffraction (Riakgu Mini Flexell Desktop Diffractometer with Cu-Ka ($\lambda = 1.5406 \text{ \AA}$.) at 40 kV and 40 mA, scanning from 10° to 100° of 2θ was used to identify the phases and crystal

Table 1
Optimum bath conditions.

Composition	Limitations range
$\text{Rh}_2(\text{SO}_4)_3$	0.0080 g/l
H_2SO_4	5 ml
Temperature	45°C
pH	1.3
Current density	4.0 A/dm^2
Deposition time	20 minutes
Coating Source	PC duty cycle: 25%, 50% and 75% DC

structure of the coated samples.

2.3. Electrochemical measurements

In the cell, electrodeposited rhodium electrodes were exposed to cathodic and anodic polarisation to determine the amount of hydrogen produced during the study. The rhodium coatings were electrodeposited on the working electrode and a platinum electrode as a counter electrode. As a reference electrode, Ag/AgCl was used. Sinsil International Private Limited in Bengaluru, India, supplied all of the electrodes. Using the CompactStat.h10800 workstation, Ivium Technologies, The Netherlands, the electrochemical behaviour of the coatings was characterised using CompactStat.h10800. The glass setup is equipped with marked micro-burettes for measuring the quantity of H_2 released throughout electrolysis. The distance between the electrodes in our setup is 5 cm, near the cathode and anode exit holes are provided. It is easier for hydrogen and oxygen to go out from the chamber rather than mixing and was achieved by utilising a modified glass tubular cell, as illustrated in Fig. 1.

3. Results and discussion

3.1. Characterization of rhodium coating

3.1.1. SEM study

As illustrated in Fig. 2, SEM is used to study the surface morphology of both PC (with different duty cycles) and DC source coatings, as illustrated in Fig. 2. The optimised current density in our work was 4.1 A/dm^2 . One of the key factors that determines the rate of HER is current density. In comparison to all the PCs and DC sources (Fig. 2 a), PC 75% samples reveal more homogeneous and smaller granules, which produce a smoother coating surface. The Rh was irregular in scale on the surface in Fig. 2 b, 2c, and 2d because there are variations in its spread, the AFM confirmed this impression (Fig. 4). The degree of uniformity decreased from PC 75% to DC. The duty cycle percentage has a considerable impact on the morphology of the surface of Rh coatings. Strong adherence and brightness were obtained for all Rh alloy coating sources, although a 75% duty cycle rendered one appropriate for HER activity [33].

3.1.2. EDX study

Fig. 2 depicts the EDX spectrum of Rh metal ions incorporated into the Rh bath solution coating. Furthermore, the weight % of Rh is presented in Table 2 and demonstrates that the Rh concentration in PC coatings is less than in DC coatings, despite the same deposition conditions. The experimental data from Table 2 indicates that the Rh content of the coating declines in the bath from DC to PC coating, and the data matches concerning SEM images. (Fig. 2). Type SS304 is a grade of austenitic steel with the following chemical composition by weight percentage; C 0.08, Mn 2.00, P 0.042, S 0.032, Si 0.72, Cr 18–20, Ni 8–12, Ni 0.10 and Fe 67–71. This change in the weight percentage of the coating causes a change in the surface roughness, as a result of this, it enhances the electrocatalytic activity [34].

3.1.3. AFM study

The AFM is a strong tool for characterising coating roughness in terms of average smoothness, which is answerable for improved electrocatalytic action. As a result, as shown in Figs. 4(a) and 3(b), a 3D AFM image of DC duty cycle and PC 75% coatings are captured. In comparison to the PC 75% source, there were considerable alterations of the surface roughness in the DC coating. The excess surface area of the active rhodium on SS304 is caused by spines and corrugations on the DC electrode. The average roughness of the PC technique was 15.9 nm, which is lower than the DC coating of 42.0 nm, indicating that the Rh is deposited relatively consistently and even. This level of uniformity in the PC method increased the electronic charge density. Register LSV, REVA University, Bengaluru - 560 064

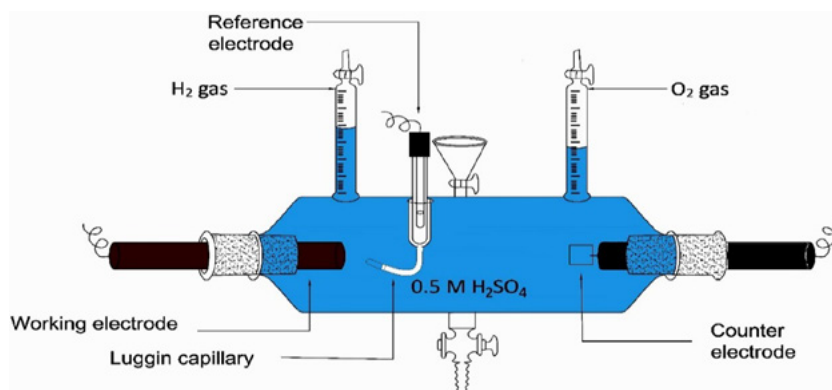


Fig. 1. A three-electrode arrangement in a modified glass cell for measuring the H₂ developed on the surface of an electrodeposited rhodium coating.

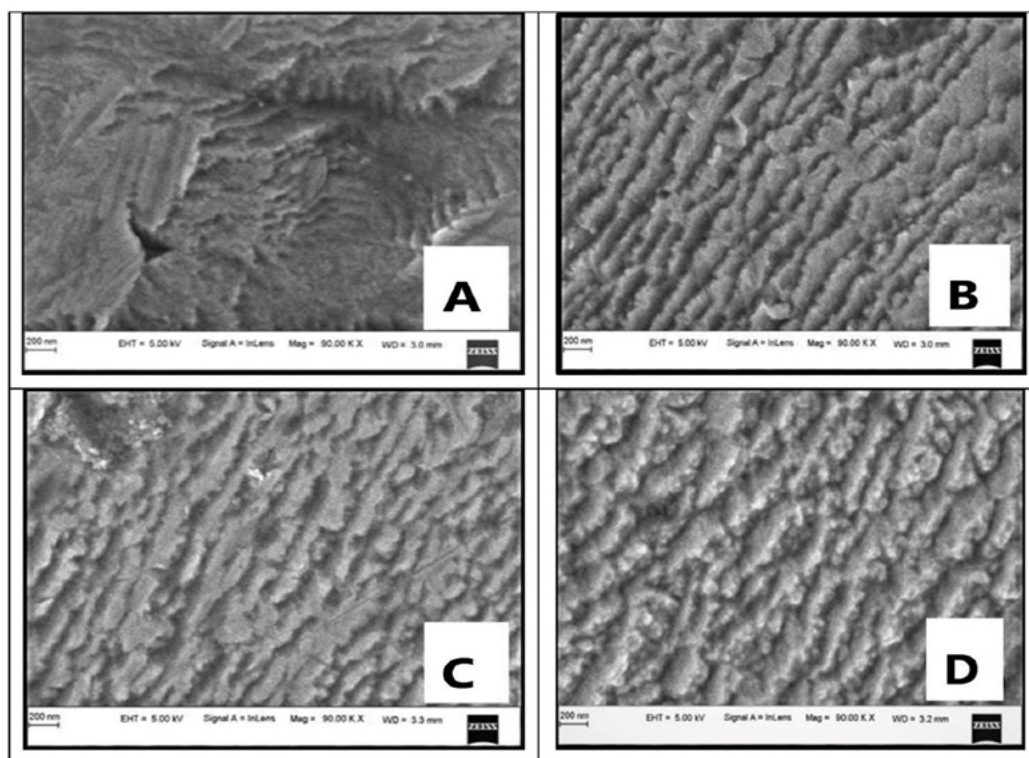


Fig. 2. Surface morphology of rhodium coatings: (a) PC 75% (b) PC 50% (c) PC 25% (d) DC.

Table 2-

Variation in the rhodium metal ions contented in different sources of coatings were mentioned approximately.

Coating source	Rh weight %	Fe weight %	Ni weight %	Cr weight %	Mn weight %	Other elements
PC	6.3	64.3	8.2	18.7	1.75	0.75
DC	10.2	61.9	7.8	18.0	1.53	0.57

which contributed to the high HER activity.

3.1.4. XRD study

Fig. 5 depicts XRD patterns for Rh deposited on SS304 at different coating sources in our study. Peaks may be seen at 43.2°, 50.9° and 75.3°

respectively. The Rh (111), (200) and (220) planes of the cubic Rh crystal can be indexed by three diffraction peaks Crystallographic search match software and powder diffraction files were used to analyse the peaks of the XRD pattern (PDF no. 1-1213). The grain sizes can be determined using Debye-Scherrer Equation [30] as given below

$$D = \frac{K\lambda}{\beta \cos\theta}$$

Where λ is the X-ray wavelength, θ is the Bragg angle, and β is the FWHM of the diffraction peak. The average grain size of the coatings is 7nm, 10nm, 12nm, and 14nm for DC, PCs, 25%, 50%, and 75% duty cycles respectively.

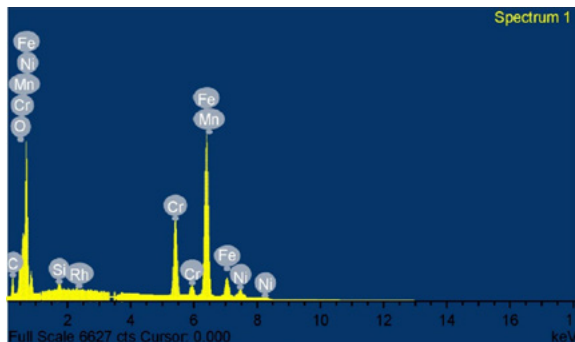


Fig. 3. EDX range of rhodium coating developed at PC 75% duty cycle using the ideal bath.

4. Hydrogen evolution reaction

4.1. Linear sweep voltammetry

As illustrated in Fig. 6, the Rh electrocatalytic activity was initially investigated for H₂ evolution in H₂SO₄ media. All of the samples exhibit a favourable hydrogen evolution process. At duty cycle 75%, Rh coated by the PC technique has a relatively low overpotential for hydrogen evolution. For HER, the overpotential of a Rh catalyst deposited by a 75% duty cycle sample is comparable to that of pure Pt. These findings support the sample's superior performance (75% duty cycle). During the hydrogen evolution reaction, the 25% and 50% samples show more overpotential and less current. It was predicted that Rh would be particularly active for HER. Indeed, the catalyst Rh demonstrated a catalytic start at virtually zero overpotential, and catalytic current rapidly increased in the sample attained at 75% duty cycle. Further cathodic sweeping revealed H₂ bubble development and discharge from the surface are both very active.

4.2. Tafel measurements

Tafel plots, as illustrated in Fig. 7, were used to assess the Rh electrocatalytic activities. Tafel slopes reveal the nature of the HER process. The Volmer Heyrovsky or Volmer-Tafel mechanistic pathways are used

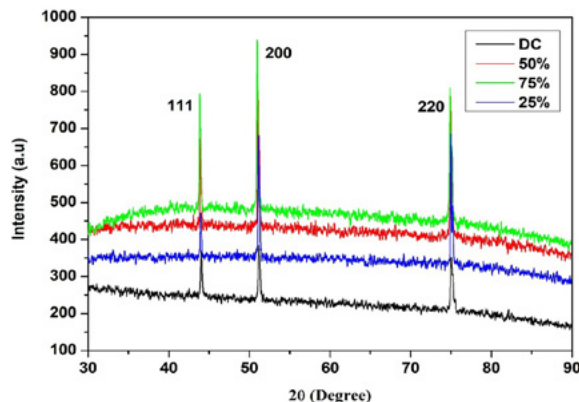


Fig. 5. XRD patterns of Rh coated by DC and PCs of different duty cycles.

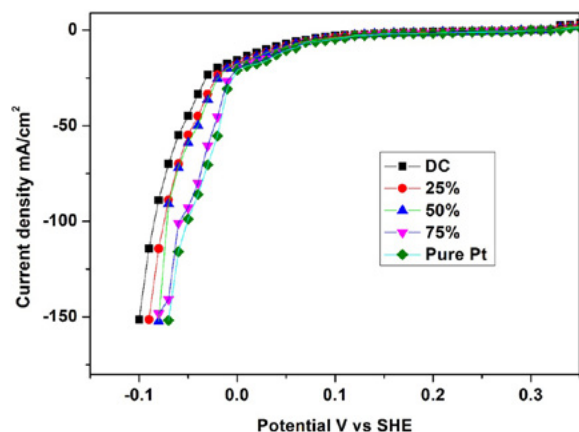


Fig. 6. LSV curves for HER on the rhodium coatings' surfaces.

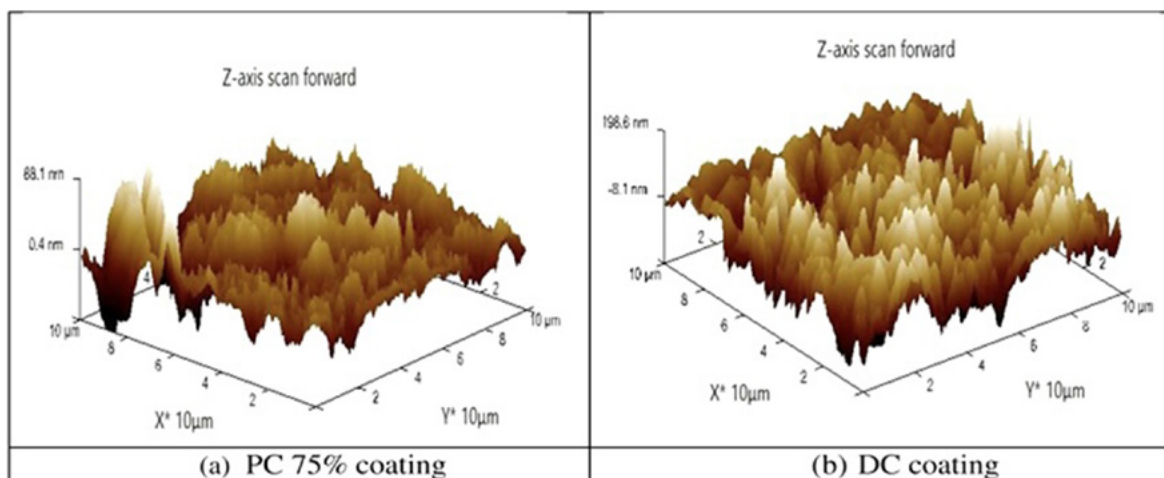


Fig. 4. AFM image of Rh coatings.

to express the kinetics factor of electrocatalytic HER. Table 3 shows the Tafel slopes of 40.7, 61.3, and 74.1 mV/dec for coated Rh deposition with PC, respectively utilising 75 %, 50 % and 25 % duty cycles. The 75 % duty cycle coated Rh catalysts had a much lower Tafel slope, indicating increased electrocatalytic activity, which is indeed more than the prepared DC samples (69.9 mV/dec). The moderate Volmer-Tafel reaction mechanism has a Tafel slope of 40.7 mV/dec is hydrogen atom desorption and that hydrogen atom desorption is the rate-determining step [35–36].

4.3. Chronopotentiometry study

The chronopotentiometry (CP) of both PC (75%, 50% and 25% respectively) and DC coatings was investigated, as well as their electrocatalytic stability. A persistent current is administered in-between the two electrodes in this method by monitoring the voltage of one of the electrodes as a function of time regarding the substance of the reference electrode. The CP experiment was carried out at a steady current of -0.35 mAcm^{-2} for 3 hrs. The electrocatalytic behaviour of the coatings was evaluated using this technique by monitoring the sum of hydrogen freed for an early 180 seconds. The amount of hydrogen liberated is recorded and registered in Fig. 9. When compared to DC coatings, PC coatings emit a greater amount of H_2 gas. This demonstrated that the preferred electrode material for HER is PC coating. Fig. 8 depicts the chronopotentiograms of PC 75%, PC 50%, PC 25%, and DC coatings. At first, the graph shows a substantial drop in potential as a function of time for both coatings. This is because, at the start of the electrolysis, the reduction of hydrogen ions and the evolution of hydrogen gas occur at a faster pace due to the rapid supply of current [37–38]. After a few minutes, there was little fluctuation in the potential with time, indicating the development of equilibrium. This shows that the release of hydrogen occurs efficiently on the electrode's surface and measurement of hydrogen release is confirmed by the fitted graduated burette in the three electrode arrangements glass tube as shown in the Fig. 1.

5. Conclusions

The coating of rhodium on SS304 by pulse and direct technique was successfully done by the PC and DC method. The coating grain size was reduced and it was achieved by the PC technique at PC 75% is inferred by SEM. EDX confirmed the presence of Rh in the base metal. The roughness of the surface is highlighted by AFM analysis, which is supported by surface morphology outcomes. The SEM results were XRD

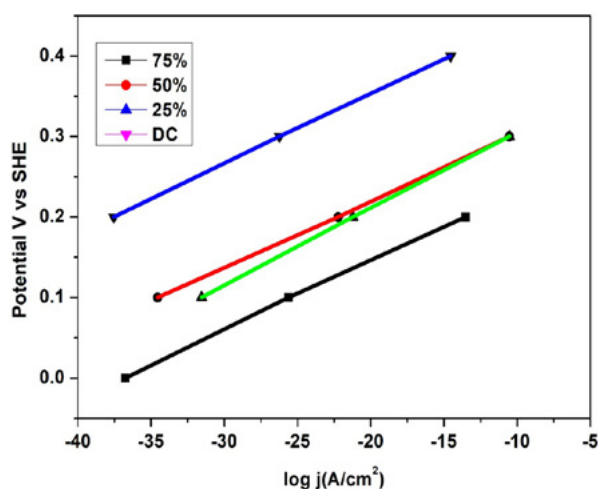


Fig. 7. Tafel graphs in 0.5 M H_2SO_4 for various electrodes.

Table 3

Tafel slopes produced for the various Rh electrodes.

Sl No	Rh electrode sample	Slope readings mV/dec
1	PC 75%	40.7
2	PC 50%	61.3
3	PC 25%	74.1
4	DC	69.9

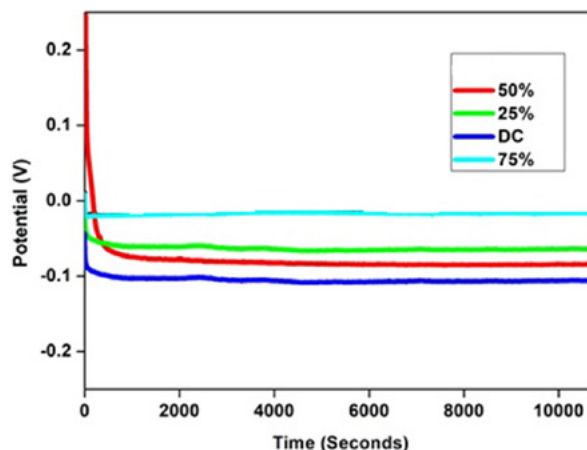


Fig. 8. Chronopotentiometry curves in 0.5M H_2SO_4

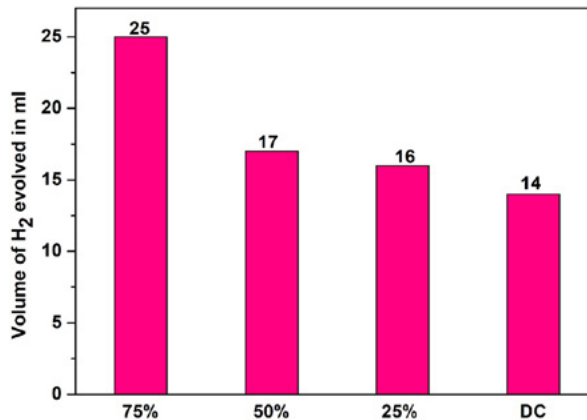


Fig. 9. The volume of H_2 evolved on each test electrode.

verified. LSV demonstrates that the created coating has less overpotential and provides greater current. The lesser Tafel slopes demonstrate the efficacy of the catalysts and validate the HER mechanism explained by the Volmer-Tafel. Values of chronopotentiometry approve the complete consequences by providing a higher hydrogen collecting volume through electrolysis. The present research has the calibre to deliver its importance and to be commercialised for industrial use (Fig. 3).

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper. Dr. Praveen B.M reports financial support was provided by Board of Research in Nuclear Sciences. Dr Praveen

B.M reports a relationship with BRNS that includes: employment and funding grants. Dr. Praveen BM has patent pending to Licensee. Dr. Praveen B.M employee of Srinivas University, College of Engineering and Technology, Mangaluru

Data availability

No data was used for the research described in the article.

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**University Industry Interaction Centre in association with
Institution Innovation Council, REVA University**

Organized IEDC Program on

“Risk Assessment of Product & Innovation Development”

About the event

University Industry Interaction Centre in association with **Institution Innovation Council** organized IEDC Program on **“Risk Assessment of Product & Innovation Development”** on 24th September 2021 from 2:30PM to 3:30PM for 3rd semester students of B.com Industry Integrated & Honors.

A brief Introduction about REVA NEST was given to students, followed by profile reading and introduction of the Speaker Mr. Pramod Kalyani.

Later the session was handed over to the speaker on Risk Assessment of product & Innovation Development.

The event was conducted in two sessions; details are as mentioned below:

IEDC Programme 24.09.2021
Afternoon 2.30PM to 3.30PM
Topic: Risk Assessment of product & Innovation Development.
Resources Person: Mr. Pramod Kalyani- CEO, Kalsoft Solutions Private Limited.

	<p>About IEDC:</p> <p>The Innovation and Entrepreneurship Development Center (IEDC) are platforms set up mainly in Engineering colleges with an aim to provide students an opportunity to innovate and experiment.</p> <p>IEDCs works as the first launch pad for a student’s entrepreneurial journey and provide them with access to cutting edge technology, world class infrastructure, high quality mentorship, early risk capital and external connects.</p> <p>IEDCs act as common platforms in academic institutions to nurture innovation and entrepreneurship culture among student Fraternity.</p>
Organized By	University Industry Interaction Centre in association with Institution Innovation Council, REVA University
School Coordinators	Prof. Kantharaju & Prof. Naresh Babu k S
UIC Coordinator	Ms. Vanitha R
Date	24-9-2021
Targeted Audience	3 rd Semester students from school of Commerce B.com Industry Integrated & Honors
No. of Participants	312
No of faculty	6
Total Participants	318
Session Link	https://bit.ly/3uhLjMG
Session Outcome	Entrepreneurship that proves to be successful in taking on the risks of creating a startup is rewarded with profits, fame, and continued growth opportunities. Entrepreneurship that fails results in losses and less prevalence in the markets for those involved.

E Banner:



REVA UNIVERSITY
Bengaluru, India
Established as per the section 2(f) of the UGC Act, 1956
Approved by AICTE, COA and BCI, New Delhi

UNIVERSITY INDUSTRY INTERACTION CENTER AND REVA NEST
IN ASSOCIATION WITH
INSTITUTION INNOVATION COUNCIL (IIC)
Organises a session on

Risk Assessment of Product Innovation & Development

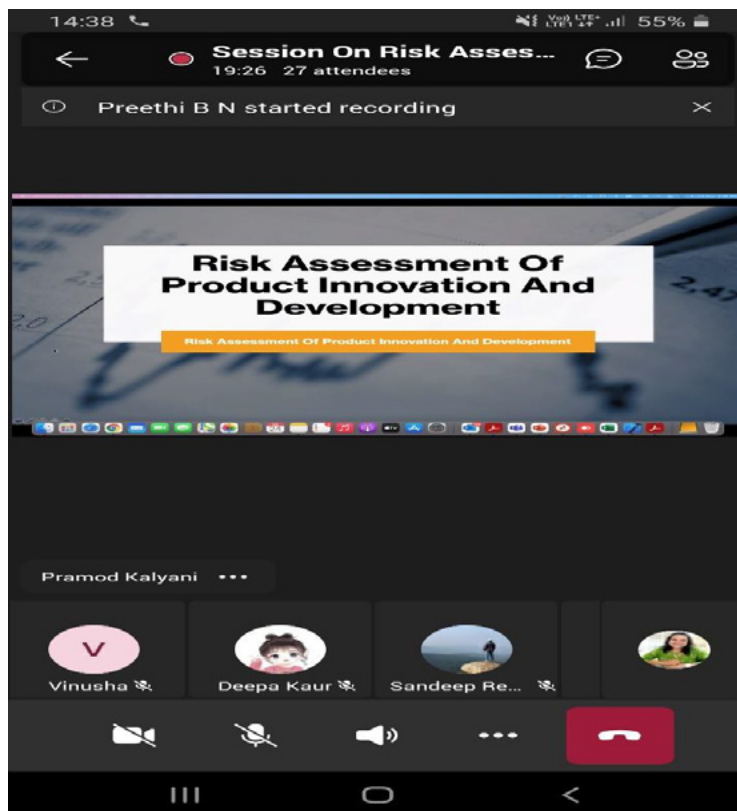
Speaker
Mr. Pramod Kalyani
CEO
Kalsoft Solutions Private Limited

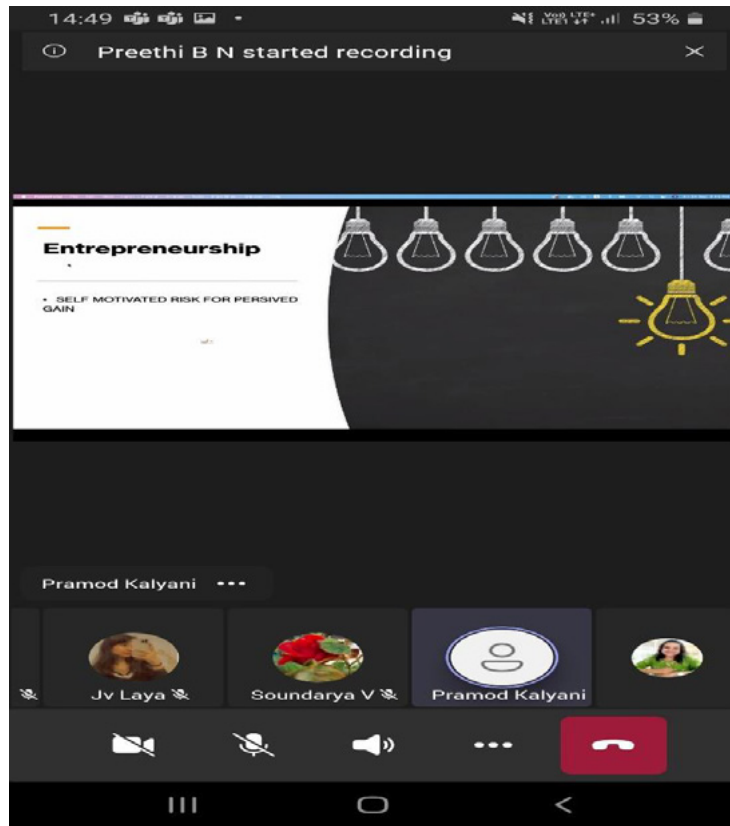
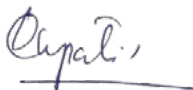
IIC Coordinator From Schools:
Prof. G Kanthraju
Prof. Naresh Babu K S

Date : 24th September, 2021
Time : 2:30 P.M. to 3:30 P.M. Session Mode : Online

www.reva.edu.in

Event Photograph:



Director

REVA ASPIRING YOUTH FOUNDATION
REVA NEST

C.V. Raman Block, REVA University Campus
Rukmini Knowledge Park, Kattigenahalli
Yelahanka, Bangalore - 560 064



Vice Chancellor

Vice-Chancellor

REVA University, Rukmini Knowledge Park
Kattigenahalli, Yelahanka, Bengaluru-560 064



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University Industry Interaction Centre in association with Institutions Innovation Council, REVA University organizes a

" Session on Essential Networking skills for innovators "

<p>About Event</p>	<p>REVA NEST & School of Computer Science Engineering in association with Institutions Innovation Council, REVA University organized "Session on Essential Networking skills for innovators "on 02nd Feb 2022.</p> <p>This session taken by Mr. Deepak Sonthalia, Co-Founder, BLIV Spaces Private Limited, session was very much useful for NEST pre-incubates & School of Mechanical Engineering, where they gain more knowledge about Essential Networking skills and Innovations, the session was more interactive.</p> <p>Speaker explained in detail about the topic by sharing his entrepreneurial Journey by explaining following topics:</p> <ol style="list-style-type: none"> 1. Discussed of 5 Essential Networking Skills. 2. Steps to be Innovators. 3. Important of Networking Skills towards Entrepreneurs. 4. Platform of advertising about ATL, BTL and social media concepts. 5. Innovator Mind sets
<p>Organized By</p>	<p>REVA NEST & School of Mechanical Engineering</p>
<p>UIIC / IIC Coordinator Name</p>	<p>Ms. Vanitha R</p>
<p>IIC Coordinator from School</p>	<p>Prof. Rajesh Babu- Mechanical</p>
<p>Date</p>	<p>02nd Feb 2022</p>
<p>Targeted Audience (School Name)</p>	<p>School of Mechanical Engineering & REVA NEST Pre-I</p>

No. of Students Participated	90
No. of Faculty Participated	5
Session Link	https://teams.microsoft.com/l/meetup-join/19%3ameeting_M2NhZGY2MjQtMTJiYi00NDM2LWJjYTAOTjZjA3NWZiNDNj%40thread.v2/0?context=%7b%22Tid%22%3a%22474565c1-bca4-4295-a2f5-b0c7dbf2591c%22%2c%22Oid%22%3a%223e8203ba-c034-447d-b9e8-a73105e37d6a%22%7d
Total Participants	95
Outcome of the Event	Students got knowledge about Essential Networking skills and Innovations,

E- Banner:



REVA NEST & School of Mechanical Engineering in Association with Institution Innovation Council(IIC)

ORGANIZES AN SESSION ON
Essential Networking Skills for Innovators

Resource Person
Mr. Deepak Sonthalia
Co-Founder
BLIV Spaces Private Limited

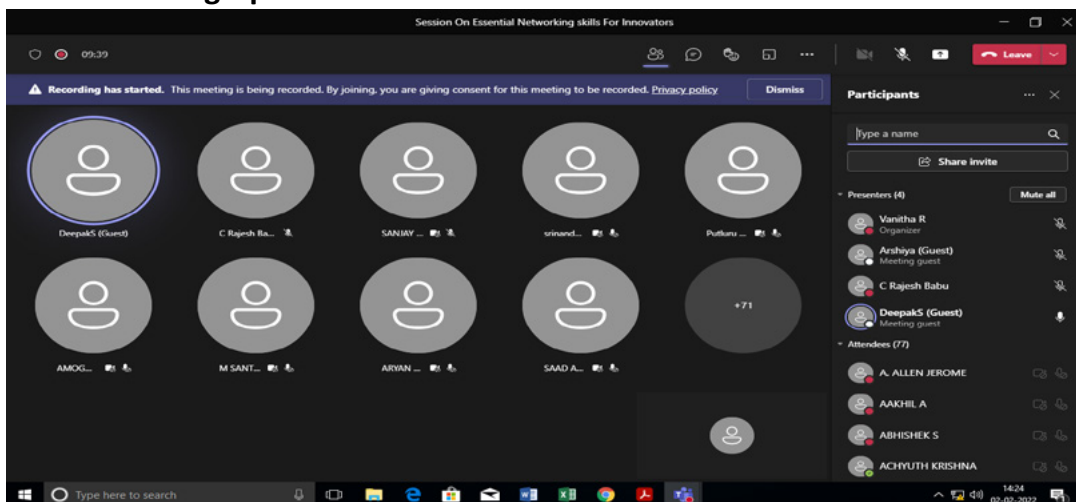
IIC Coordinator:
Prof. Rajesh Babu
Mechanical Engineering

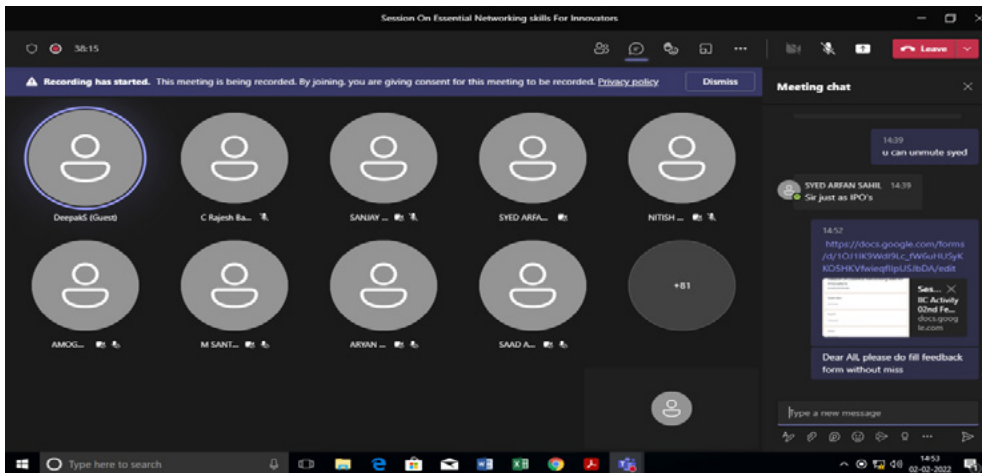
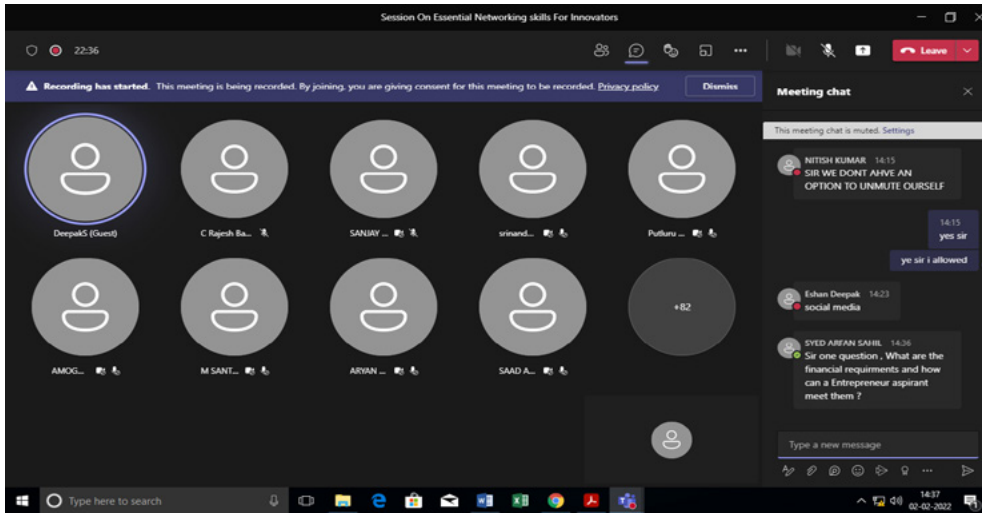
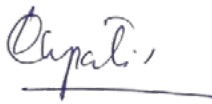
Date : 2nd February, 2022
Time : 2:00 P.M. to 3:00 P.M.

Session Mode : Online

www.reva.edu.in

Session Photographs:



Director

REVA ASPIRING YOUTH FOUNDATION
REVA NEST
C.V. Raman Block, REVA University Campus
Rukmini Knowledge Park, Kattigenahalli
Yelahanka, Bangalore - 560 064



Vice Chancellor

Vice-Chancellor

REVA University, Rukmini Knowledge Park
Kattigenahalli, Yelahanka, Bengaluru-560 064



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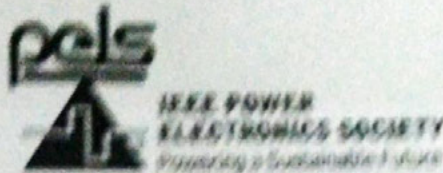
School of Electrical and Electronics Engineering,

Presents

Post Webinar Report on

"Skill & Employability"

In association with IEEE Power Electronics Society Student Branch, REVA University



04.03.2023


Greetings of the day!

We are happy to announce that, School of Electrical and Electronics Engineering in association with IEEE Power Electronics Society Student Branch, REVA University, organized a Webinar on "Skill & Employability" on 04.03.2023. Mr. Subas Chandra Sadangi, Manager-HR, Sterelite Power, was the invited as resource person for the event. The Scope of the webinar involved participants from school of EEE.

Dr. Riteesh Dash, Associate Professor, School of EEE, initiated the webinar by welcoming the Guest. He narrated the contribution of Mr. Sadangi. He also delivered the vote of thanks and thanked the Guest and all the participants of this Webinar. A total of 79 students from SoEEE were participated in the program.

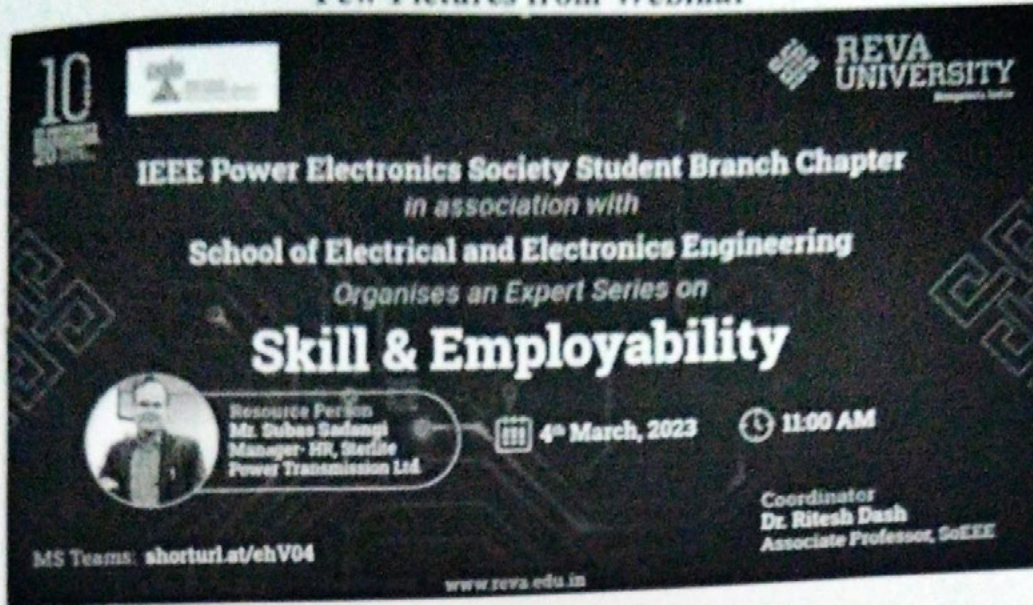
We would like to thank Dr. M.Devanathan, Associate Professor, ECE and IEEE Student branch Counsellor, REVA University for providing the Opportunity to organize such a beautiful event.

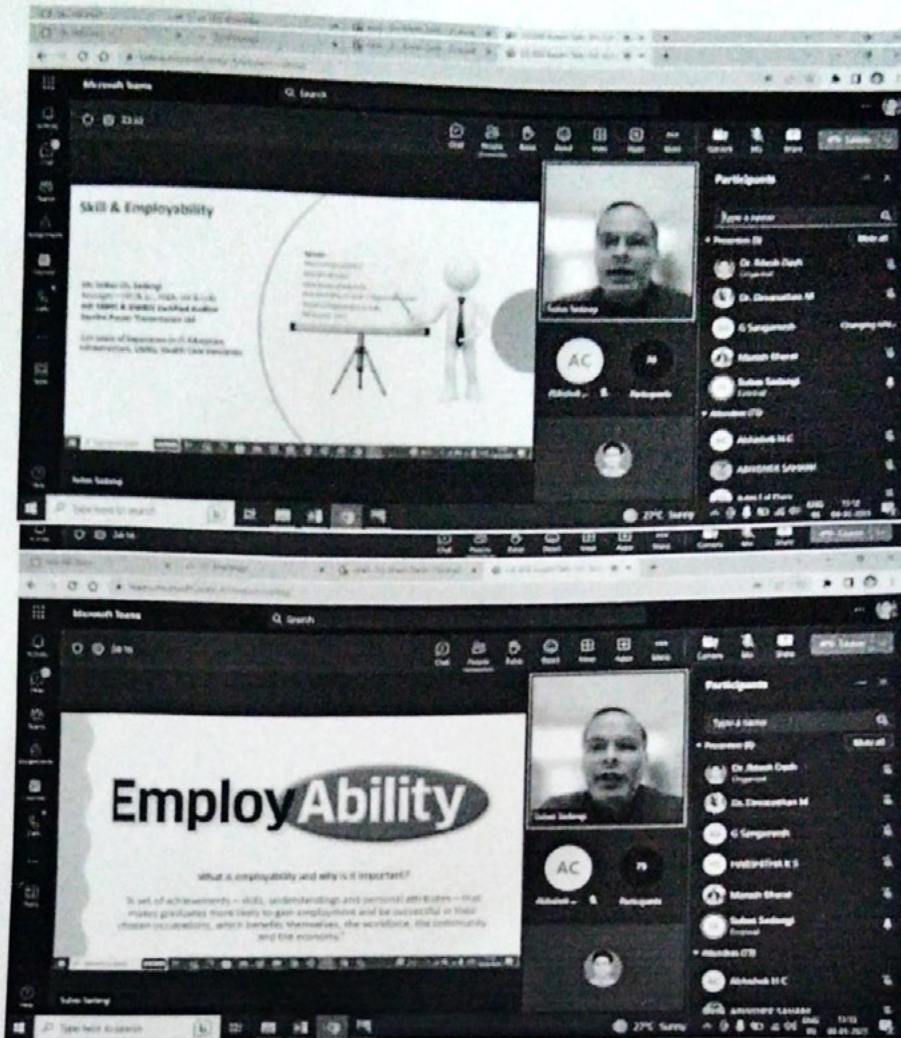
School of Electrical and Electronics Engineering, REVA University


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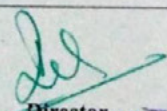
Few Pictures from Webinar

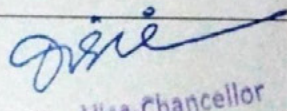




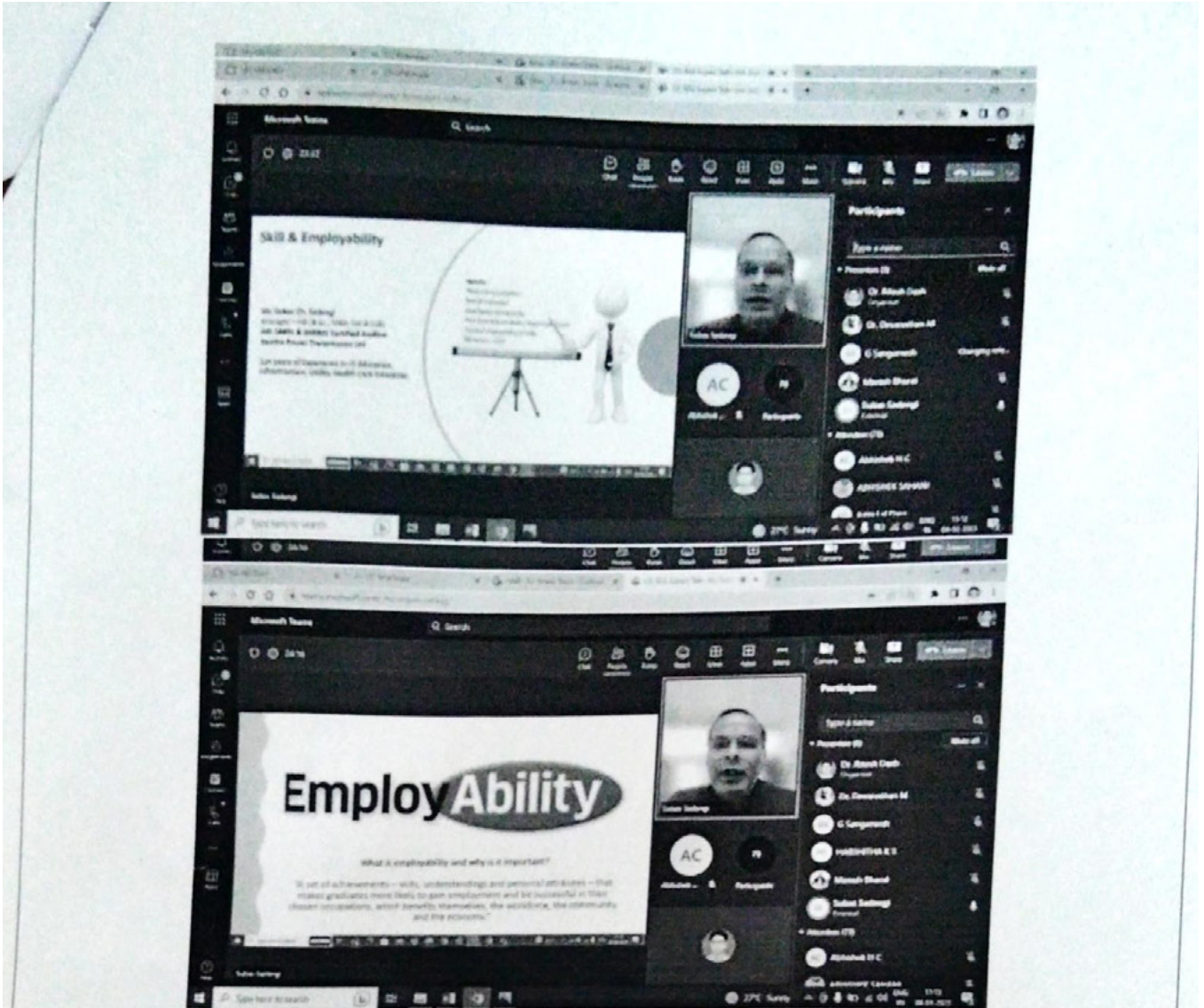
Co-coordinators

Dr. Ritesh Dash, Associate Professor, SoEEE


 Director
 Director
 School of Electrical &
 Electronics Engineering
 REVA University, Rukmini Knowledge Park
 Kattigenahalli, Yelahanka, Bengaluru-560 08


 Vice-Chancellor
 REVA University, Rukmini Knowledge Pa
 Kattigenahalli, Yelahanka, Bengaluru-560


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Co-coordinators

Dr. Ritesh Dash, Associate Professor, SoEEE

[Signature]

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 School of Electrical &
 Electronics Engineering
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Sanskrit Arts Festival and all women's world arts festival
22nd August, 2021

The School of Performing Arts and Indic Studies in affiliation with International Arts and Cultural foundation conducted Sanskrit Arts Festival and all women's world arts festival on 22nd August, 2021; 5:00 pm onwards at SevaSadan Auditorium, Malleshwaram .

This festival showcased the power of women singers and players . Well known women musicians like Deepika Sreenivas, Subha Santhosh , Manasi Prasad and many others were part of this event. 15 students and faculty from the school participated and learnt at this event.

International Arts & Cultural Foundation
Presents
All Women World Arts Festival (10th Edition)
Sanskrit Arts Festival

Program Live on
IACF
YouTube LIVE

Supported by

Deepika Sreenivasan (mridangam)
Shubha Santhosh (veena)
Manasi Prasad (Lead Vocal)
Aditi Krishnaprakash (Violin)
Vijetha Hegde (Tabla)

All Women Sanskrit Music Presentation
Experience the musical beauty of Classical Language

• 22nd Aug 2021 (Sunday)
• SEVASADAN Auditorium
14th cross Malleshwaram
• 5:00PM

Please follow Covid-19 protocol (Entry for 100 members only)

Director
SoPA&IS

Event Co-ordinator
SoPA&IS

Vice Chancellor
REVA University

Director
School of Performing Arts
REVA University
Rukmini Knowledge Park, Kattigenahalli,
Yelahanka Bengaluru - 560 064



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Nadabramha - Women Empowerment program through sound energy

14.10.22-17.10.22

A beautiful 3 day workshop conducted by Mr Harish at Reva University. This workshop conducted from 14th of October to 17th of October . A very effective workshop which made all the participants feel very different . There were a very few people who enrolled for the workshop as it was conducted as a group as well as individually . The workshop was all about concentration and tuning of human mind to do things what you wish for , and some sound energy transmission and energy transfer in the body .

On the first day , all the participants were seated and were asked to just close our eyes and observe our breathing process . Then with the help of the singing bowls , Mr Harish created sound vibration which started to be felt in our breathing . Slowly with open palms, the receiving of energy started . At first all us participants were so mesmerised about what was happening around with us just with sound energy . All of us felt some kind of chills or tingling sensation on our palms when we were asked to concentrate . The first day went really confused for all the participants as they had no idea about what was happening to them

The second day was a little better since we all attended the first day and it was a continuation of the first day, with a little bit of an extension to it . There were more pressure points that were activated and the feeling of the energy flow was much more intense than the previous day. Mr Harish also prepared us for the final day by some additional techniques which resulted in some powers . To all the participants it felt like it was some sort of magic .

On the third and the final day , all the participants had an intense session along with sound energy through the singing bowl . Ok the final day after straight session when Mr Harish asked the participants to transfer energy to each other, everyone could feel the transfer of the energy through one's palm to the other as though it was some sort of magic . The heat and the energy within one was slowly being transferred to the other .

The whole session was so informative as well as filled with new experience. Hope there are much more workshops to come and it helps all the students of the University experience such divine things .

School of Performing Arts & Indic Studies



**Director
SoPA&IS**

Director
School of Performing Arts
REVA University
Rukmini Knowledge Park, Kattigenahalli
Yelahanka Bengaluru - 560 064

**Event Co-ordinator
SoPA&IS**



**Vice Chancellor
REVA University**

Vice-Chancellor

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Kattigenahalli, Yelahanka, Bengaluru-560 064

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Bengaluru - 560 064**

School of Civil Engineering

23-02-2022

Brief Report on Memorandum of Understanding Between SWIFTERZ ACADEMY and REVA University

MOU is made between "SWIFTERZ ACADEMY" a part of SWIFTERZ PLATFORM owned by SWIFTERZ CREATIVE SERVICES (LLP) Head quartered at Coimbatore, Tamil Nadu and having its regional office in Bangalore, Karnataka. (First party) and REVA University, Bengaluru (Second party).

Guest Lecture

on

"Architecture, Engineering and Construction (AEC) Industry 2.0"

School of Civil Engineering has organized a Guest Lecture on "Architecture, Engineering and Construction (AEC) Industry 2.0". The resource person for this lecture was Mr. Anand, Founder & CEO of SWIFTERZ CREATIVE SERVICES (LLP) Bangalore, Karnataka.

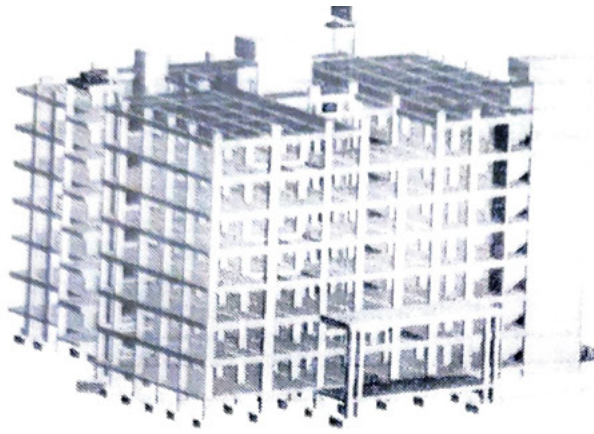
The Lecture begin by welcoming the students and with brief introduction of SWIFTERZ CREATIVE SERVICES and briefed on the subject of opprtunities in Civil Engineering. The guest lectures was attended by UG 6th , 8th Semester and PG 1st , 4th Semester students. Mr. Anand spoke about use of Build Information Modelling for digitization in Construction Industry.

Venue: Civil Seminar Hall Room No. 107 A, Sir MV Block

Glimpses of the Guest Lecture.



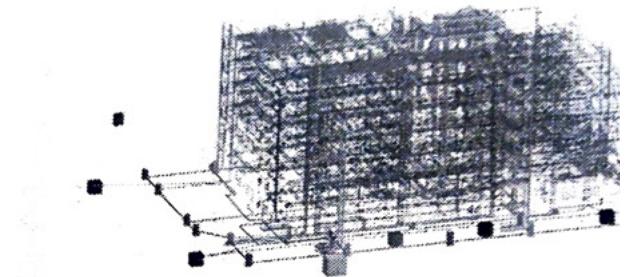
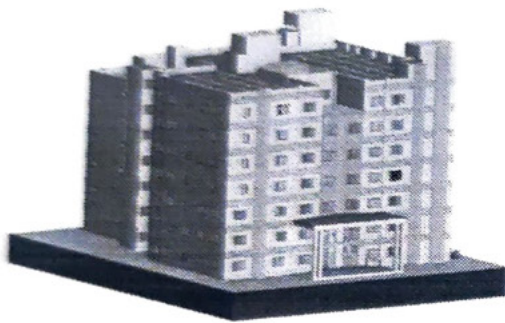

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SCHOOL OF CIVIL ENGINEERING

Sl.No	NAME	Signature
1	Shreya patil	<i>Shreya</i>
2	Harshita.D. Kabade	<i>Harshita</i>
3	Lasya.B	<i>Lasya</i>
4	P.V. Madhavi	<i>Madhavi</i>
5	M. Vaishnavi	<i>Vaishnavi</i>
6	MEGHANA.N.C	<i>Meghana</i>
7	Jhanusha S.G	<i>Jhanusha</i>
8	parameshwari	<i>param</i>
9	Ethin.K	<i>Ethin</i>
10	Jeevan Singh .eg	<i>Jeevan</i>
11	H Vishal Kumar	<i>Vishal</i>
12	N. Dorababu	<i>N Dorababu</i>
13	KUSHAL N	<i>Kushal</i>
14	chinthan H.M	<i>Chinthan</i>
15	Shreekanth.C.	<i>Shreekanth</i>
16	Om. Deagan	<i>Om</i>
17	Siddhu gaucla	<i>Siddhu</i>
18	Vinod. N	<i>Vinod</i>
19	VEERESH	<i>Veeresh</i>
20	VANAYAKA - C - MASTHI	<i>Vas</i>
21	P. Adarsh	<i>Adarsh</i>
22	Harshan	<i>Harshan</i>
23	Vday	<i>Vday</i>
24	K. prashanth	<i>K. Prashanth</i>
25	SHASHANK.S.	<i>Shashank</i>



SCHOOL OF CIVIL ENGINEERING

Sl.No	NAME	Signature
26.	Perajwal Gowda	Perajwal
27.	MUZAMMIL AHMED	Muzammil
28	Karshith umesha	Karshith
29.	M.K. Rahul Naik	Rahul Naik
30	Harsha B	Harsha
31	Dhanraj P	Dhanraj P
32.	Tejvan Singh G	Tejvan
33	XXXXXXXXXXXX	XXXXXXXXXXXX
33	Sharath Kumar S.K	Sharath
34	Madhusulhan Gowda	Madhusulhan
35	Saptha Swaroop H.	Saptha
36	Skandan O.D	Skandan
37.	Charan Vishwanath KM	Charan
38.	Dhanraj King. L. S.	Dhanraj
39	DARSHAN.S.S	Darshan
40	Shreyas	Shreyas
41	Gagandeep Jai K. T. K.	Gagandeep
42	Dayanandha Devi	Dayanandha
43	Jeerana V	Jeerana
44.	Mansij. N	Mansij. N

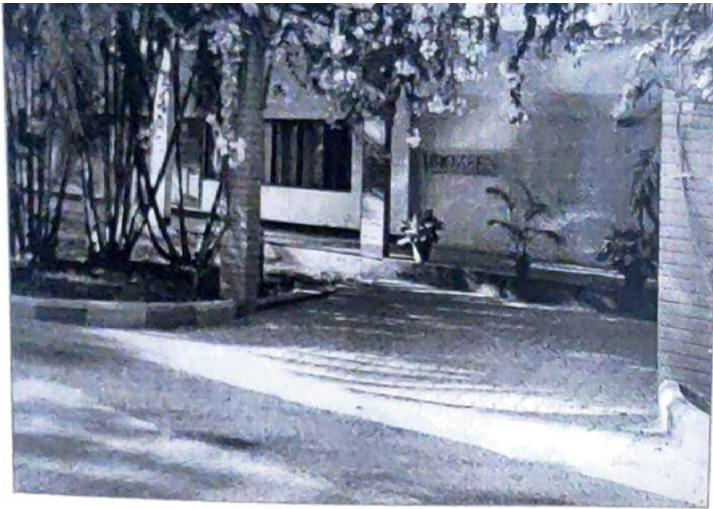
REVA UNIVERSITY
SCHOOL OF APPLIED SCIENCES
DEPARTMENT OF APPLIED SCIENCES

A REPORT ON THE SKILL DEVELOPMENT PROGRAM AT BIOZEEN
DEPT. OF BIOTECHNOLOGY, SCHOOL OF APPLIED SCIENCES
REVA UNIVERSITY

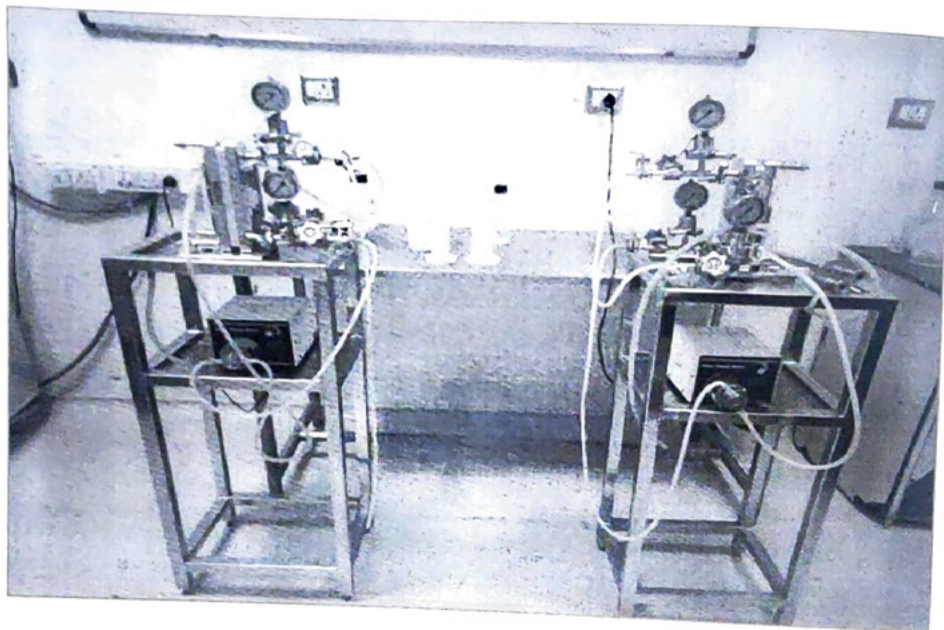
A skill development program was arranged for the students of 3rd semester, Msc Biotechnology department of REVA University at Biozeen, Hennur, Bangalore from 18th January 2021 to 22nd January 2021. Biozeen is a private firm which manufactures state of the art biofermentors and bioreactors and caters to several production houses, industries and research labs across the globe. It was a 5- day program which focused on providing hands-on training to the students in the areas of Downstream Processing mainly, chromatography and filtration techniques. The students attended the program in batches of two. The session was initiated by Dr. Nellaiah, Head, Research and Development and Training on the various bio-analytical techniques that are involved in research and development. The briefing session was followed by a short introduction on filtration (both ultra and microfiltration) and chromatography (both ion exchange and affinity chromatography) techniques by Ms. Vinobiah and Ms. Cristina, respectively. The trainers played a great role in imparting knowledge as well skills to the students. The modules included filtration and chromatography units operations, SIPs, functioning of the apparatus, and the different equipment available commercially. The students received hands on in Purification process in downstream. Overall, the program proved to be beneficial in terms of getting a real time scenario of DSP in Industry.

The main office of Biozeen



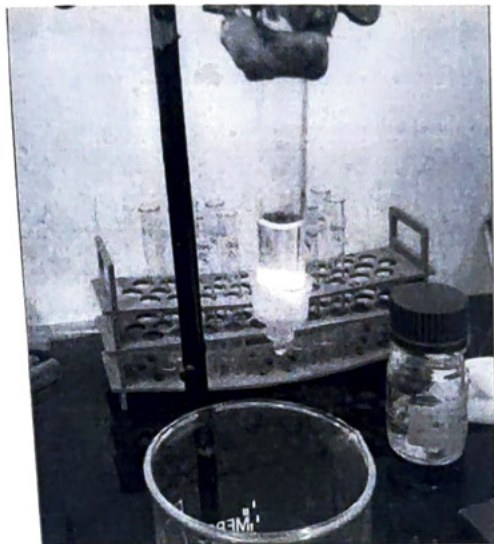


Filtration units (micro and ultra) at Biozeen



Chromatography unit (Ion exchange) at Biozeen



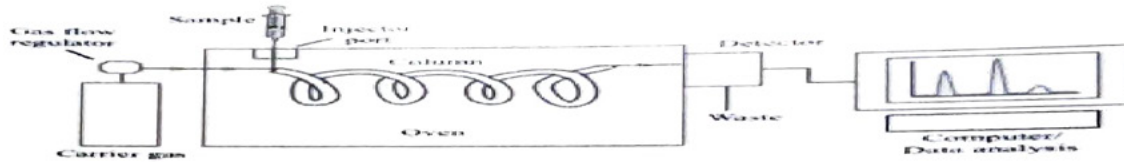
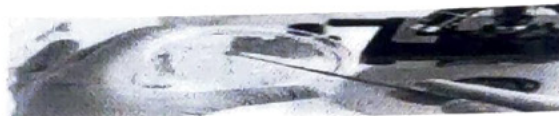
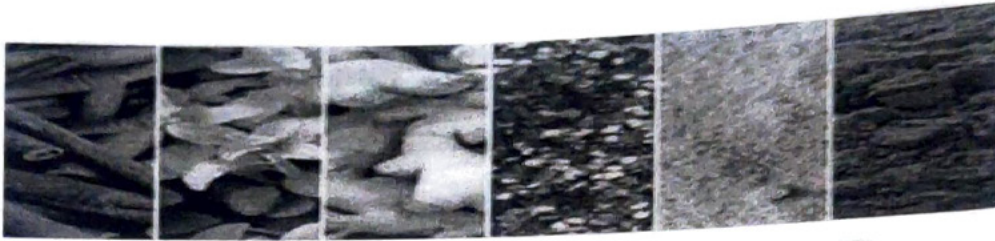





Skill Development Program (SDP) at ASPARTICA BIOTECH PVT LTD

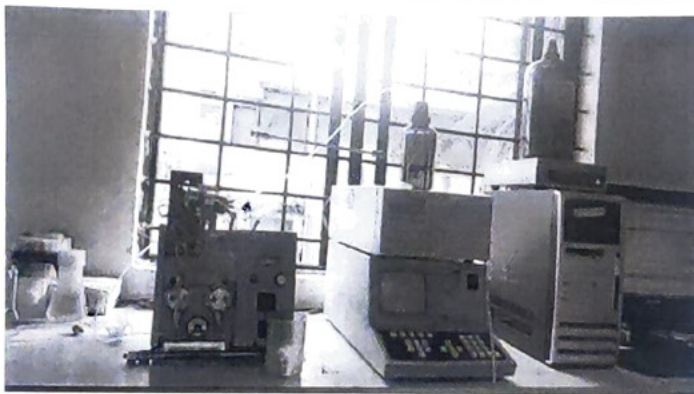
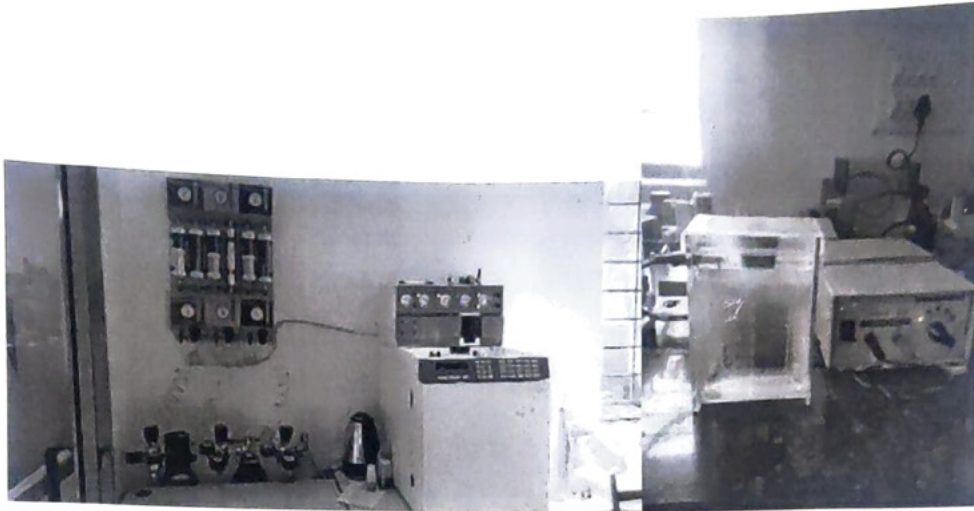
M.Sc Microbial Technology, first semester students completed their one week SDP on “BASICS OF EXTRACTION, QUALITY ANALYSIS OF PLANT EXTRACTS & VALUE ADDITION” from 27th December to 31st December, 2021 at Aspartica Biotech Pvt Ltd, Bengaluru. The resource person was Mr. Srinivas who gave good practical exposure on the modules such as Pigment isolation from Microorganism, Plant extracts & Value addition for bio-products, HPLC analysis. It was a very productive session as students gained hands on in various molecular biology tools used in industries.





Skill Development Program (SDP) at AZYME BIOSCIENCES PYT LTD

M.Sc Microbial Technology, first semester students completed their one week SDP on Biochemical techniques from 18th January to 25th January, 2022 at Azyme Biosciences Pvt Ltd, Bengaluru. The resource person was Dr. Mahesh who gave good practical exposure on the modules such as Protein isolation, Gel Electrophoresis, PCR amplification, HPLC analysis. It was a very productive session as students gained hands on in various molecular biology tools used in industries.







Registrar
REVA University
Bengaluru - 560 064



University Industry Interaction Center, School of Computer Science & Engineering and School of Computing and Information Technology in association with Vodafone Organizes a

“Student Workshop on Cloud Computing”

About Event	<p>University Industry Interaction Center School of Computer Science & Engineering and School of Computing and Information Technology in association with Vodafone Organizes a “Student Workshop on Cloud Computing on 25th to 27th April, 2022 from 01:30 PM to 04:30 PM.</p> <p>Ms. Deepika from Edunet is the resource person for the 3 days workshop. Ms. Deepika Provided the hands on training and session on AWS cloud, IBM Cloud, Cloud Foundry, Python Development etc.</p> <p>Total 45 Participants from REVA University attended the session and got benefitted in AWS Cloud, IBM Cloud etc.</p>
Organized By	UIIC, School of CSE & CIT
Coordinator Name	Mr. Adithya Poojary, Mr. Surendra Babu, Mr. Nikhil Tengli
Date	25 th to 27 th April, 2022
Time	1:30 PM to 4:30 PM
Venue	C N Rao Seminar Hall, C V Raman Block, REVA University
Targeted Audience	Students from REVA University
Mode of Session	Offline
Total Participants	45

Outcome of the Event	In this 3 days workshops students are undergone and understood the concepts of Cloud Computing, AWS cloud, IBM Cloud, Cloud Foundry, Python Development etc.
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E-Banner:




REVA UNIVERSITY
Bengaluru, India
Established by Govt & recognized by UGC Act, 1956, as per the section 2(F), Approved by AICTE, COE and BCI, New Delhi. Accredited by NMAC.

University Industry Interaction Center
 School of Computer Science & Engineering and
 School of Computing and Information Technology
 in association with Vodafone

Organises a

Student Workshop on Cloud Computing

Registration Link:
<https://forms.office.com/r/SB7HD1gn68>

Date: 25th to 27th April, 2022 | Time: 1:30 P. M. to 4:30 P. M. | www.reva.edu.in

Session Photographs





Chapal

Director

REVA ASPIRING YOUTH FOUNDATION
REVA NEST
C.V. Raman Block, REVA University Campus
Rukmini Knowledge Park, Kattigenahalli
Yelahanka, Bangalore - 560 064

Truce

Vice-Chancellor

Vice-Chancellor

REVA University, Rukmini Knowledge Park
Kattigenahalli, Yelahanka, Bengaluru-560 064

Roe

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REVA University
Bengaluru - 560 064

Date: 22nd Nov 2022

Reference: HR/Intern/2022/Nov/001

Ms. Rida Fathima
REVA University
D/o Mr.Sharmas ,
#1, Bilal Masjid quarter, Pilanna Garden
Bangalore
Karnataka – 560045

Subject: Internship Offer Letter

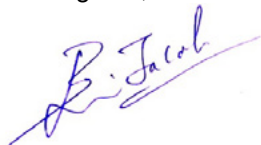
Dear Ms. Rida Fathima

We would like to confirm that your application for internship Position: **Intern – Operations & Marketing**, at SecIQ Technologies LLP has been accepted. Here are the terms of internship while working with the company:

1. This internship contract **will be for 2 months** (60 days) starting from 22nd November 2022 and upon performance contract extension will be considered.
2. You will be designated as “**Intern – Operations & Marketing**” and not eligible for any stipend in the first 2 months.
3. You will not be entitled for any other benefits from the company during this venture.
4. From time to time, your performance will be evaluated by Program Manager Mr.Joel Rao.
5. During internship, you are expected to abide Code of Conduct prescribed by the company for all the employees.
6. You need to sign a NDA for data Security purpose.

Please feel free to contact us in case of further details. Wishing you good luck for your future endeavors. We look forward to having you joining our team.

Best Regards,



Bivin Jacob
Co-Founder & Business Head
SecIQ Technologies LLP.

Accept Job Offer:

By signing and dating this letter below, I, Mr. Hudson Daniel, accept this internship as “**Intern – Operations & Marketing**” by SecIQ Technologies LLP.

Signature:

Date: 22/11/2022

SecIQ Technologies

#9, 5th Cross, NN Halli, Kempegowda Layout, Dr.S.K.Nagar Post, Bangalore – 560077, India
www.seciqtech.com


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Bengaluru - 560 064

School of Electrical and Electronics Engineering,

Presents

**Post Conference Report on International Congress on Renewable Energy
(ICORE-2021)**

27th -28th Nov, 2021

Greetings of the day!

We are happy to announce that, **School of Electrical and Electronics Engineering, organized two days International Congress on Renewable Energy (ICORE-2021) on 27th and 28th Nov. 2021** in association with Arhus University, Denmark and Sponsored by Solar Energy Society of India.

The conference presented an open forum for scientists, researchers and engineers to exchange the latest innovations and research advancements in the areas of Electrical Engineering like generation, transmission, distribution, utilization, storage, smart grid, conservation of electrical energy, etc. Renewable Energy like Solar PV system, Wind Energy System, Renewable Grid Interconnection System etc. In recent times there has been tremendous evolution in Electrical & Electronics Engineering research due to challenges brought by distributed energy sources integrations, Smart grid solutions, DSM, loss optimization, strengthening of electrical distribution system, EV integration, energy conservation, power quality issues, etc. The conference was included with plenary sessions and invited talks from eminent researchers on the state of the art in related areas. Contributions describing original research, surveys and applications. Topics of interest include, but are not limited to, the following areas: Power Electronics, Electric Vehicles, Smart Grid, Data Analytics, Carbon Neutrality, Advanced analytics for Energy Industry and Data science fundamentals.

The Scope of the conference involved participants (researchers, developers and users) from academics, industries and research laboratories coming together to discuss recent advances and trends in Electrical, Electronics and Computer Engineering.

Dr. Raghu C N, the Deputy Director of School of EEE, initiated the conference by welcoming the Hon. Chancellor of REVA University, Dr. P. Shyama Raju, the Vice-Chancellor of REVA University, Dr. M Dhanamjaya, Chief Guest of the conference Dr. Asvini Kumar, Ex-MD Solar Energy Corporation of India, Sri. Prafulla Pathak, President SESI, Dr. S.M Ali, Vice-President, SESI, Deans, Directors, Faculty members of REVA University, organizers, students and participants of the conference. He, gave the brief overview of the conference. Subsequently, Hon. Chancellor, Dr. P. Shyama Raju announced the release of the proceedings of the conference. He bestowed his blessings,graced the audience, empowered all the participants, and addressed the virtual audience and filled enthusiasm with his encouraging words for the participants.

Dr. B P Divakar, Dean, Research and Innovation, introduced the Chief Guest, Dr. Asvini Kumar, Ex-MD Solar Energy Corporation of India. Hon. Chancellor, Dr. P. Shyama Raju and Dr. M Dhanamjaya, the Vice-Chancellor presided over the inaugural function.

Finally, Dr. S. Ml Ali, Vice-President, SESI delivered the vote of thanks and thanked dignitaries, the conveners, and all the participants of this virtual conference.

A total of **167 papers** were received from different parts of globe namely, Peru, Tanzania, Malesia, Brazil, Cape Town and many more, out of which **60 papers** were selected after multiple review, plagiarism checking process and final technical review by the expert committee. Finally, 38 revised versionpapers are received. Total of 32 papers were selected for publishing in Scopus Indexed Conference Proceedings.

The conference witnessed an overwhelming appreciation for the keynote sessions delivered by, **Dr. Prof. Atif Iqbal, Fellow IET (UK), Fellow IE (India) and Senior Member IEEE, Vice-Chair, IEEE Qatar section, DSc (Poland), PhD (UK)** on 27th Nov, 2021 from 10.30am to 11.15am on the topic "**Renewable Grid Interconnection Sytem**". The session was well received and appreciated by the audience and student community and was found to be very interesting and informative.

Prof. Lakhdar MOKRANI Head of 'Control and Energy Management of Electrical Systems'
School of Electrical and Electronics Engineering, REVA University



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research group of LACoSERE Laboratory Electrical Engineering Department Laghouat University - Algeria., delivered keynote address on 28th Nov, 2021 from 10.30 to 11.15 am, on the topic titled *"The Role of Advanced Analytics in the Energy Industry"*. The session gave the greater insights about the role of Advanced analytics for the research community to work on, and was well received by the entire virtual audience.

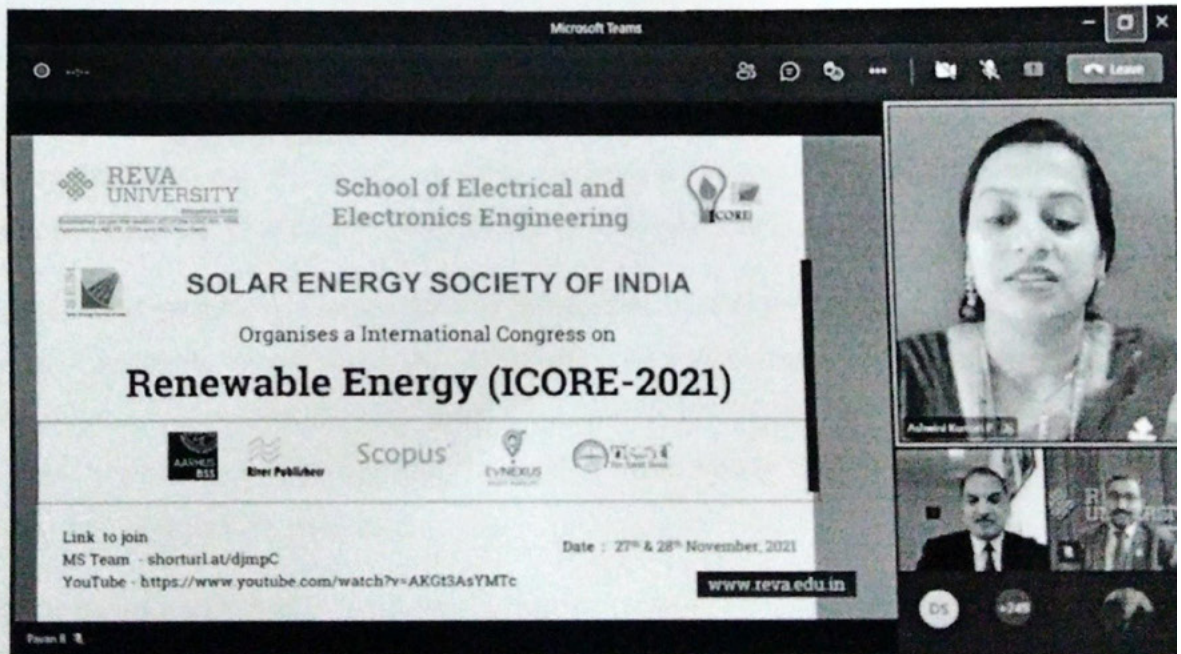
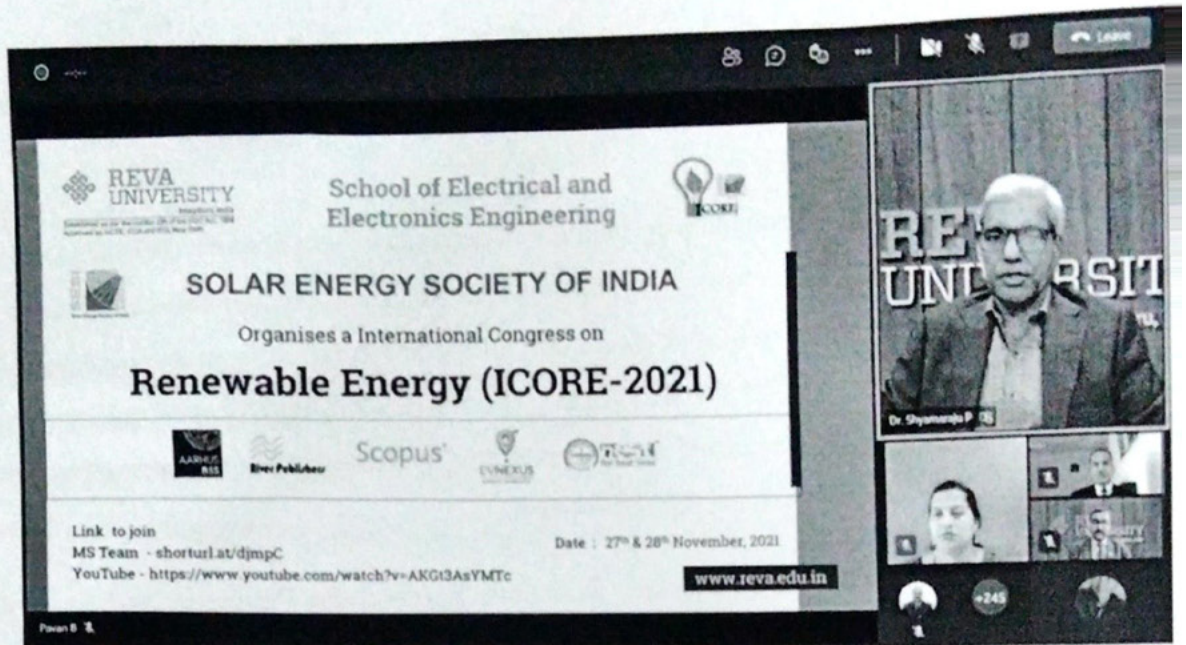
The authors presented papers in 4 difference tracks with parallel sessions under the various domains for two days from 11.00 am to 12.30 pm, and 2.00pm to 3.30 pm with each track comprising of 150 minutes.

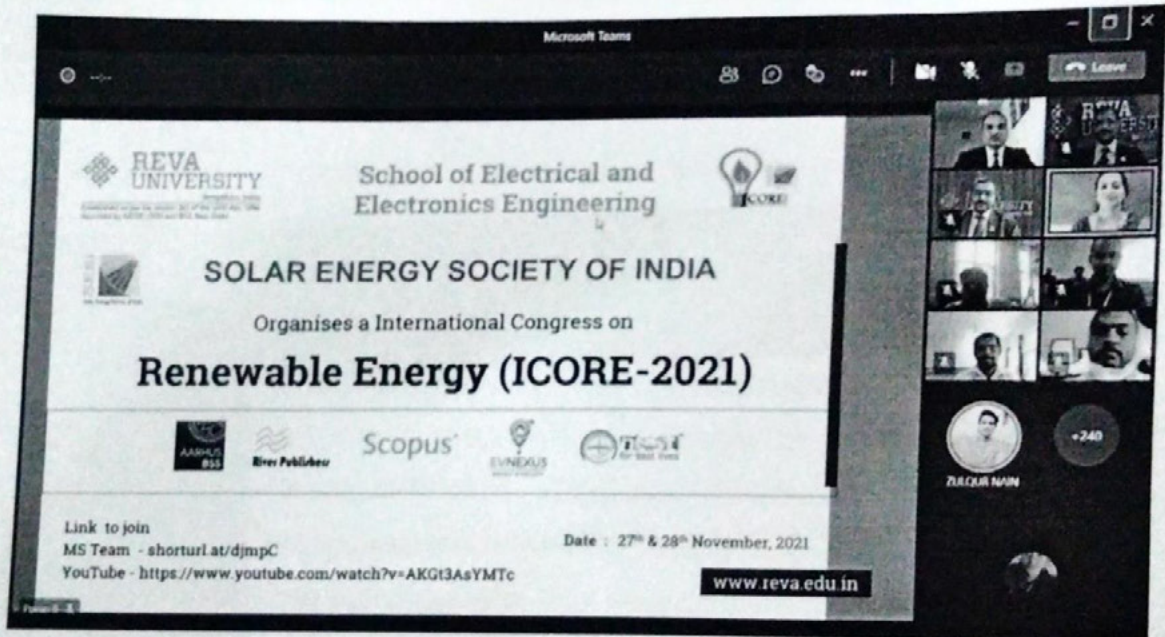
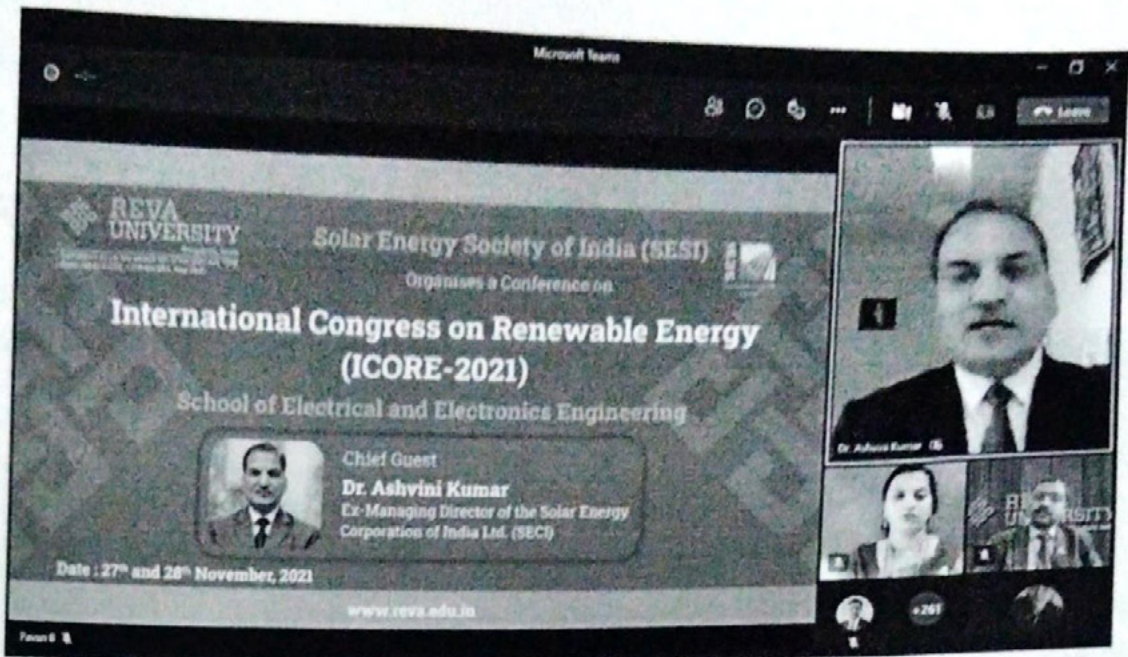
ICORE- 2021 concluded with valedictory function in presence of our Deputy Director, Dr. Raghu C N. Few authors shared their experience and was followed by appreciation notes to the session chairs. Finally, one best papers ~~stud~~ after evaluating all the presentation from different tracks and was awarded with BEST PAPER AWARD. All the students who presented papers and participated in ICORE-2021 were highly appreciated and congratulated by the organizing and expert committee for their interest and initiative in carrying out research.

The conference provided an open forum for Scientists, Researchers, Engineers and Students to exchange the latest innovative ideas in research advancements in the areas of Electrical, Electronics and Computer Engineering, including smart grids, Solar PV System, Wind System and Renewable Grid interconnection system.

The conference was organized in association with *Solar Energy Society of India*.

Few Pictures from Inaugural Ceremony





Classification tree /Decision tree

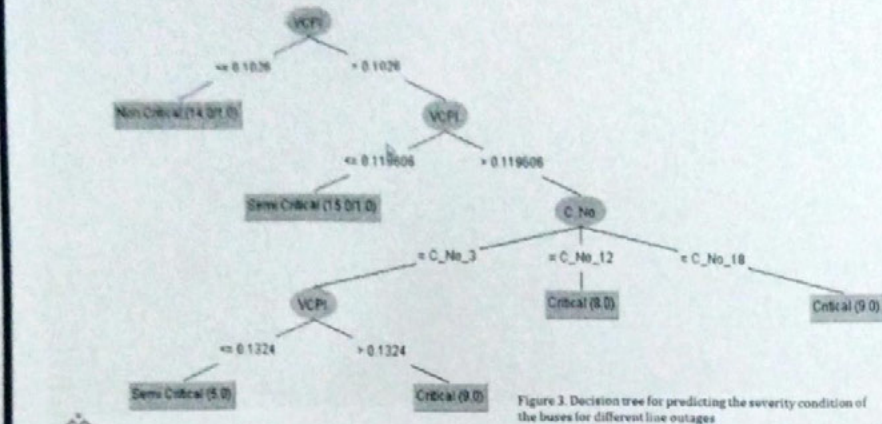


Figure 3. Decision tree for predicting the severity condition of the buses for different line outages

www.reva.edu.in

KCORE-2021-27th and 28th November organized at REVA UNIVERSITY

CORE

Title: Energy Efficiency Enhancement of Wind power Plant by using P&O MPPT

Paper ID: 14

Name of the presenter: Sri N. Siddhik

Name of the authors: Sri. K. Ramamohan Reddy, Sri. K. Kalyan Kumar

Affiliation: JNTU Anantapuramu

[Handwritten Signature]
Director
School of EEE

[Handwritten Signature]
Vice-Chancellor
REVA University, Knowledge Park
Kattigenahalli, Yelahanka, Bengaluru-560 064

School of Electrical and Electronics Engineering, REVA University

[Handwritten Signature]
Registrar
REVA University
Bengaluru - 560 064



School of Civil Engineering

Report on Webinar

“Opportunities for Civil Engineers in Defence Forces as Commissioned Officers”

Title of the event: “Opportunities for Civil Engineers in Defence Forces as Commissioned Officers”

Venue	: MS Teams, Reva University
Date	: Saturday, 5 th June 2021
Coordinator	: Mr. Ajaybhaskar Reddy/ Mr. K. Chandraprakash
Supporting Organizers	: Mrs. Minakshi, Mr. K. Chandraprakash, Mrs. Pushpa Lumina

Event Details:

The School of Civil Engineering, REVA University-Bangalore has organized a webinar on topic of **Opportunities for Civil Engineers in Defence Forces as Commissioned Officers** on 5th June 2021 at 5.30pm to 6.30pm. This event had a motive to impart knowledge on the out of curriculum context domains of civil engineering.

Resource Speaker:

Brig. C. K. Ramesh (Retd)

The main take away of this webinar were key fundamentals aspects of Opportunities for Civil Engineers in Defence Forces as Commissioned Officers. There was overwhelming response for the webinar evident through 200 plus participants.

Students and faculty coordinators on behalf of School of Civil Engineering, Thank Honourable Chancellor Dr. P. Shyama Raju sir and Vice Chancellor Dr. M. Dhanamjaya sir.

We also extend our acknowledgement to our Director Dr. Y. Ramalinga Reddy sir, School of Civil Engineering and also our Asst. Director Dr. Rajasekhara S L.

We also thank all the faculties of School of Civil Engineering, REVA University for their continuous support in organizing the events.



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Outputs of Webinar:

I. Objectives:

- ❖ The primary mission of the Indian Army is to ensure national security and national unity, to defend the nation from external aggression and internal threats, and to maintain peace and security within its borders.
- ❖ Civil engineers have several opportunities first being UES for Indian army indeed you need to be either in pre-final/final engineering, followed by Several other opportunities, that includes AFCAT, CDS, TGC, SSC-Tech UES-NAVY. Civil Engineers can join Indian Army through CDS.

II. Military Applications:

- General Civil Engineer aspects for construction works.
- Commissioned officers through UES/CDS
- Flying officers through AFCAT
- Technical Ground works through TGC

III. Creative and digital banner:




**School of Civil Engineering
in Association with Cavalier India**

Organises a webinar on

**Opportunities for
Civil Engineers in Defence Forces as
Commissioned Officers**



Speaker :



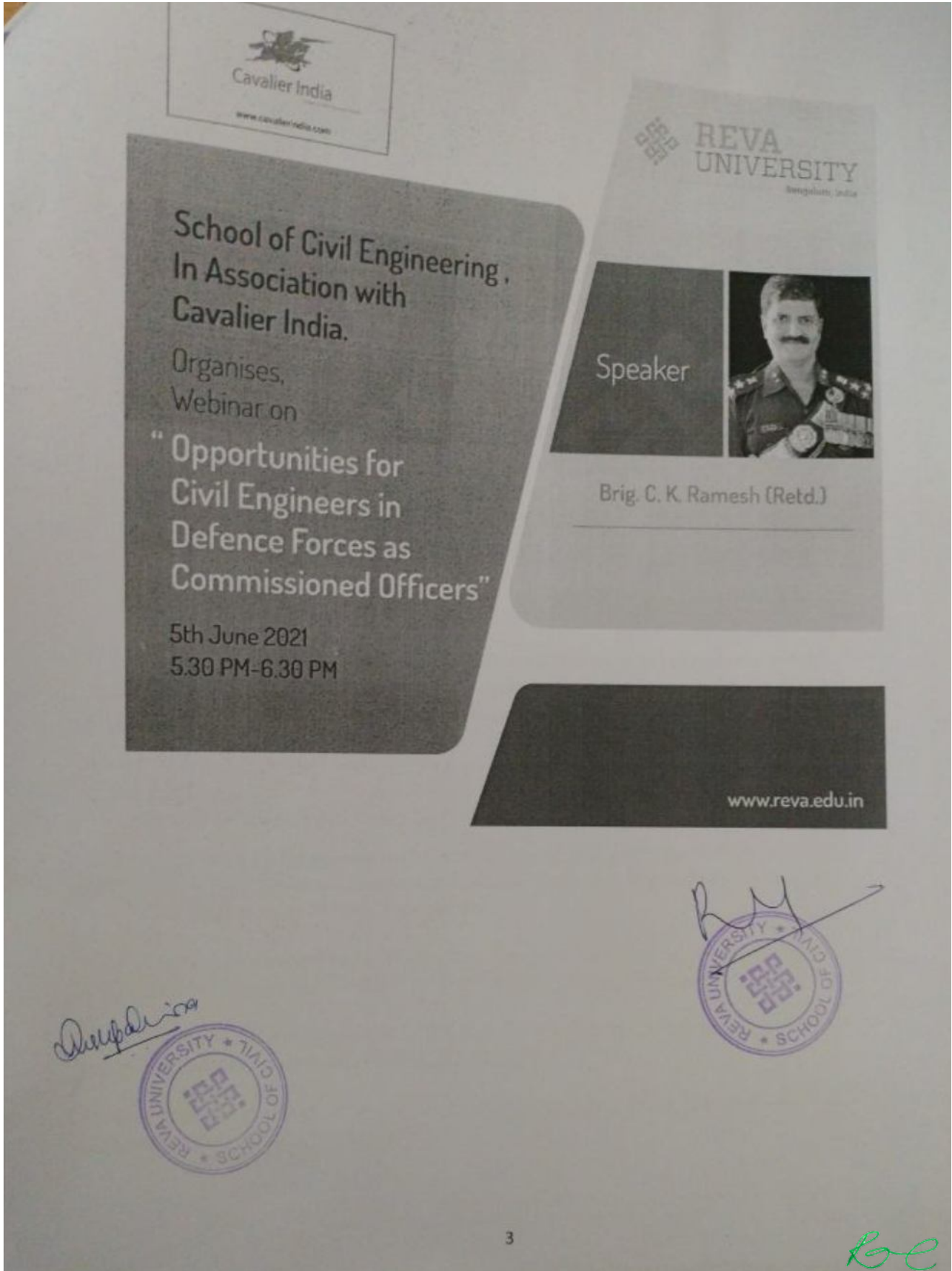
Brig. C. K. Ramesh (Retd.)


www.reva.edu.in

Date : 5th June, 2021

Time: 05:30 P. M to 06:30 P. M


Mode: Online(MS-Teams)





Cavalier India
www.cavalierindia.com

**School of Civil Engineering,
In Association with
Cavalier India.**
Organises,
Webinar on
**"Opportunities for
Civil Engineers in
Defence Forces as
Commissioned Officers"**

5th June 2021
5.30 PM-6.30 PM


 **REVA**
UNIVERSITY
Bengaluru, India


Speaker



Brig. C. K. Ramesh (Retd.)

www.reva.edu.in

D. S. Srinivas


R. M.




REVA UNIVERSITY

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Rukmini Knowledge Park, Kattigenahalli
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Karnataka, India.

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