Genesis of Biomed 360

The ultimate goal of Biomed 360 is to get a virtual learning experience to comprehend the functioning of medical devices. This campaign focuses on bringing together all the students from the Biomedical sector. This campaign is a joint initiative by IEEE EMBS Young professionals, IEEE student volunteers and Biomedical Engineering students with the main aim of building the biomedical society. Here the biomedical students and graduates collaborate with biomedical professionals from various sectors and work on gathering data and information on medical equipments. Thus reaching out to common people, could be an eye opener to the biomedical society on building every student’s knowledge regarding the versatile range of devices. This campaign shall bring out a resourceful detail on every medical equipments which not only aims at authentic information but also focuses on learnings of teamwork.

Campaign in a nutshell

**Objective:** Create videos/writeups which contains an abstract of perspective on medical equipment from all angles thus providing a bird’s eye view of a medical equipment.

**Target Group:** Doctors, Biomedical Engineers, Manufacturers, Research Scholars, Maintenance engineers, Patients etc.

**Volunteers:** Biomedical Engineering students

Reach out to Biomed 360

Biomed 360 has an Instagram page through which our proposed videos are planning to be released.

Instagram Page: biomed360_bme

Email address: biomed360bme@gmail.com
DEFIBRILLATOR

Defibrillators are devices that help to restore normal heartbeat by sending an electric pulse to the heart. They are used to correct an arrhythmia, a heartbeat that is uneven or is too slow or too fast.

sona s

DIALYSIS MACHINE

Dialysis is a treatment that filters and purifies the blood using a machine. This helps keep your fluids and electrolytes in balance when the kidneys can't do their job.

sona s

MRI MACHINE

The MRI machine is a machine that patients lie within, and the MRI creates a strong magnetic field around the patient and related pulses of radio waves produce signals from the body that are detected and converted into images.

sona s

OXYGEN CONCENTRATORS

Oxygen concentrator is a device that concentrates the oxygen from a gas supply (typically ambient air) by selectively removing nitrogen to supply an oxygen-enriched product gas stream.

sona s
MENTORS

Mentor Group 1
Mr. Sibin M Krishnan
About
Graduated from RJ Chalakudy
Service Specialist in Dialysis
Experience - 13 Years
Equipment - Dialysis Machine

Mentor Group 2
Mr. Ranjith
About
Graduated in Electrical and Electronics Engineering from GEC Thrissur
working as Service Engineer at Wipro GE Healthcare and Pvt Ltd
Experience - 8 years | Equipment-MMI

Mentor Group 5
Ms. Aminath Sabeena
About
Graduated in electronics and biomedical engineering from TKM College
worked in biomedical engineering in healthcare start up
Experience - 2 years
Equipment - ECG Machine

Mentor Group 4
Mr. Vivek George
About
Graduated MTech in biomedical engineering from SBM University
working as managing director in Trivita innovation Pvt Ltd
Experience - 11 years | Equipment- oxygen concentrator
MENTORS

**Mentor Group 6**

Ms. K Kokila

About
Graduated in biomedical engineering at TKM Kochi. Worked in Anthapuri Hospital and Research Institute.

Experience: 2 years
Equipment: Ventilator

**Mentor Group 3**

Ms. Reshma P D

About
Graduated in ME Biomedical Engineering.

Experience: 3 years
Equipment: Defibrillator

**Mentor Group 7**

Ms. Sivapriya

About
Cardiac perfusionist worked in Nanyana Hospital, Medical College Parryraam and Eye Hospital Cochin.

Experience: 4 years
Equipment: Heart Lung Machine
GROUP DESCRIPTION

GROUP 1

Equipment: DIALYSIS MACHINE

A machine used in dialysis that filters a patient's blood to remove excess water and waste products when the kidneys are damaged, dysfunctional, or missing. The dialysis machine itself can be thought of as an artificial kidney. The two main types of dialysis, hemodialysis and peritoneal dialysis, remove wastes and excess water from the blood in different ways. This machine also help who are affected by malfunctioning of kidneys and help them to bring back their normal lifestyle.

Mentor: Mr. Sibin M Krishnan
Service Specialist-Dialysis-Freelancer

Leader: Deepthi GA - MBCET

Members:
Albin Simon - SCET
Ameena Muhammad - TKMIT
Clinto Martin - SCET
Jifeena Johnson - SCET
Krishnapriya S - SCET
Reshma N K - TKMIT
Steve - TKMIT
Vivek - MBCET
GROUP 2

**Equipment : MRI MACHINE**

A non-invasive medical imaging technique used in radiology to produce three-dimensional images of anatomical and physiological processes of the body is MRI. It adopts the principle of nuclear magnetic resonance (NMR), which is a spectroscopic technique used to obtain microscopic chemical and physical data about molecules. This scan can be used as an extremely accurate method for disease detection and diagnosis like, in musculoskeletal problems, vascular abnormalities, prostate problems, soft tissues and bone pathology conditions, gastrointestinal conditions, ailments of the brain including tumor, spinal conditions and in ENT conditions. The benefits of an MRI scan relate to its precise accuracy in detecting structural abnormalities of the body along with less risk by avoiding radiation exposure.

**Mentor :** Mr. Ranjith  
Service Engineer at Wipro GE Healthcare and PVT Ltd

**Leader :** Ajeena A K - TKMIT

**Members :**
- Amrith Ajay - TKMIT
- Beryl Paulson - SCET
- Don C John - SCET
- Keerthi Das - SCET
- Lakshmi K - SCET
- Rishi Manoj - TKMIT
- Sujin S Nair - MBCET
GROUP 3

Equipment: DEFIBRILLATOR

Defibrillators are devices for restoring a normal heartbeat. They are used to prevent or correct an arrhythmia, a heartbeat that is uneven or that is too slow or too fast. There are different kinds of defibrillators: manual external defibrillator, manual internal defibrillator, automated external defibrillator (AED), implantable cardioverter-defibrillator (ICD), and wearable cardiac defibrillator. ICD is used in patients who are critically affected by arrhythmia. It works by using a high-intensity electrical current which is given through the paddles towards the patient’s chest to depolarize the myocardium. This life-saving equipment is taken to cure the patient from sudden cardiac arrest. Treatment with a defibrillator can reduce the risk of sudden death by terminating ventricular arrhythmias.

**Mentor**: Ms. Reshma P D
Biomedical Engineer

**Leader**: Linda Elizabeth M B - SCET

**Members**:
- Abhinav Shekhar - MBCET
- Anargha C P - SCET
- Athira Vinod - TKMIT
- Farsina P.S - SCET
- Karthika A M - SCET
- Malavika R - MBCET
- Vishnu A J - MBCET
GROUP 4

Equipment : OXYGEN CONCENTRATOR

An oxygen concentrator is a simple medical device which is used to concentrate the amount of oxygen in the air. The basic working principle of the instrument is to concentrate the amount of oxygen by removing the nitrogen from the air by using an absorbent called zeolite. This is mainly used in various industries including medical, pharmaceutical production, water treatment and glass manufacture. Nowadays it is commonly used in homes in the form of portable devices for the patient having bed rest. The main advantage of using an oxygen concentrator than an oxygen cylinder is that they are less dangerous. And these are more reliable.

Mentor : Mr. Vivek George
Managing Director, Trivia Innovation Pvt Ltd.

Leader : Febi Mariyam Chandy - TKMIT
Members :
Aghna N M - SCET
Angela Varghese - SCET
Ann Elizabeth Babu - MBCET
C Krishna - MBCET
Madhu Krishna A P - JCET
Rohith J Nair - MBCET
Vipina V V - MBCET
GROUP 5

Equipment : ECG MACHINE

An ECG machine is one of the important medical equipment that is widely used in hospitals from casualty to OT. It gives the electrical function of our heart by recording the electrical activity by using electrodes placed on the body. It works on the principle that a contracting muscle generates a small electric current that can be detected and measured through electrodes suitably placed on the body. During an ECG up to 12 electrodes will be attached to the chest and limbs. The electrodes are sticky patches with wires that connect to the monitor. They record the electrical signals that make your heartbeat. A computer records the information and displays it like waves on the monitor or paper. ECG is widely used in medicine to monitor small electrical changes on the skin of a patient’s body arising from the activities of the human heart. This simple and noninvasive measurement easily indicates a variety of heart diseases.

Mentor : Ms. Aminath Sabeena
Executive Assistant, Yovza Technologies.

Leader : Rosemol Toby - SCET
Members :
Agnes Placid - TKMIT
Gopika S D - TKMIT
Jeny Baiju - SCET
Madhumitha R Pillai - TKMIT
Rosemary E R - SCET
GROUP 6

**Equipment : VENTILATOR**

A ventilator is a mechanical device to provide artificial ventilation or breathing to a patient. It delivers breaths to a patient who is physically unable to breathe, or breathing insufficiently and works by bringing oxygen to the lungs and taking carbon dioxide out of the lungs. The patients who require the need for a ventilator are those who are affected by lung disease (pneumonia, COPD), brain injuries, stroke and also in surgical cases after giving anesthesia. Its basic function is to produce positive airway pressure by inflating the lungs. Mainly ventilation can be of two types: invasive and non-invasive, with other varied forms for adult and neonatal. This is the most essential life-critical system for renewing people’s life.

**Mentor :** Ms. K Kokila  
Biomedical Engineer, Ananthapuri Hospital and Research Institute

**Leader :** Greeshma Bobby - SCET  
**Members :**  
Aiswarya M Rajan - SCET  
Annu Mariya Jose - SCET  
Anze Joshy - SCET  
Aswathy P - SCET  
Jasmine John - SCET  
Shanty P Xavier - SCET  
Sujisha Suresh - SCET  
Sweta Manoj - SCET
GROUP 7

Equipment : HEART - LUNG MACHINE

The heart-lung machine does work both of heart and lungs i.e., is pumping and oxygenating blood. The heart-lung machine intercepts the blood at the right atrium before it passes into the heart. Using a pump the machine delivers the blood to the reservoir, which adds oxygen to the blood. The pump then sends the oxygen-rich blood to the aorta and through the rest of the body. These machines are used in open-heart surgeries to replace a valve in the heart or fix a hole in the heart. This maintains the circulation of blood and oxygen content.

Mentor : Ms. Supriya
Cardiac Perfusionist

Leader : Hitha Jayapalan - SCET
Members :
Aiswarya Shajan - SCET
Antony Paul - SCET
Anusree K U - SCET
Hiba - TKMIT
Mariya Mathan - SCET
Sona Sajan - SCET
Sreelakshmi - SCET
MEDICAL PROFESSIONALS

INTERVIEW
GROUP 6

About:
working as Biomedical Engineer at Royal Hospital for Women and Children, Bahrain
Experience - 8 years
Equipment - Ventilator

Mr. Akhil S Nair

facebook.com/biomed360  www.biomed360.com  instagram.com/biomed360

INTERVIEW
GROUP 6

About:
Service Engineer at Taiba Medserv, Muscat, Oman
Experience - 16 years
Equipment - Ventilator

Mr. Sanoop Balakrishnan

facebook.com/biomed360  www.biomed360.com  instagram.com/biomed360

INTERVIEW
GROUP 5

About:
BSc. Nurse at Dr. Tariq Hospital, Bahrain
Experience: 6 years
Equipment: ECG Machine

Ms. Greeshma Alwin

facebook.com/biomed360  www.biomed360.com  instagram.com/biomed360

INTERVIEW
GROUP 5

About:
Teacher at Higher Secondary School and currently running a prominent Medical Entrance Institute.
User Experience
Equipment: ECG Machine

Shyju Teeyes

facebook.com/biomed360  www.biomed360.com  instagram.com/biomed360
INTRODUCTION

GROUP 6

About:
Asst. professor, Department of pulmonary medicine, GMC Kannur, Paryaram.
Worked as TB and chest consultant, Dist. TB Officer, Kannur
Experience - 20 years
Equipment - Ventilator

Dr. K V Padmanabhan

GROUP 3

About:
Pursued Diploma in General Nursing and Midwifery, from Rajah Charitable Medical Trust, Chawakkad.
Experience: Worked as a Staff Nurse in Hayath Hospital, as well as Rajah Hospital, Chawakkad. Currently, a staff nurse in the emergency department of Anna Institute of Medical Sciences.
Equipment - Defibrillator

Simi T.S.

GROUP 1

About:
Completed diploma in Dialysis Technician course from Aster MIMS, Calicut.
Pursued BSC in Renal Dialysis Technology from Rayan Gandhi Institute, Bangalore.
Experience: Dialysis technician in Aster MIMS Kochi, Kerala, Malappuram as well as Kidney Foundation Hospital.
Equipment - Dialysis Machine

Ramshila AR

GROUP 5

About:
Currently pursuing MEngST(research), Medical Devices and technologies, Auckland Bioengineering Institute, University of Auckland, New Zealand
Equipment - ECG Machine

Mr. Leio AV
**INTERVIEW GROUP 7**

**About:**
MD Scholar (General Medicine)

Equipment - Heart Lung Machine

Ms. Aparna Sreejith

**INTERVIEW GROUP 1**

**About:**
MBBS TD medical college, Alappuzha
MD Trivandrum medical college
DM nephrology Thiruneveli medical college

Equipment - Dialysis Machine

Dr. Harikrishnan

**INTERVIEW GROUP 1**

**About:**
Engineer-technical services at Fresenius Medical Care, Chennai

Equipment - Dialysis Machine

Mr. Ahmed Shamil K

**INTERVIEW GROUP 6**

**About:**
Post Nursing tutor currently working in school of nursing
St. James hospital chalaiudy

Experience - 12 years of clinical and 6 years of teaching.
Equipment - Ventilator

Mrs. Jessy Jophy
Professionals Agreed to Join Biomed 360
In order to make the campaign more unique and to bring out the best results, we approached many professionals having work experience to share their views on equipments. The following are the list of professionals working with us in each group sharing their knowledge and resources with us to add more colors to this initiative.

Group 1- Dialysis Machine

1. Name: Mr Ahmed Shamil K
   Designation: Technical Service Engineer

2. Name: Dr Harikrishnan
   Designation: Consultant - DM Nephrology

3. Name: Ms Ramshila AR
   Designation: Dialysis Technician

Group 2- MRI Machine

1. Name: Mr Aromal
   Designation: Technician

2. Name: Ms Neha
   Designation: Biomedical Head

3. Name: Dr Simi
   Designation: Radiologist

4. Name: Mr Ranjith
   Designation: Service Engineer

Group 3 - Defibrillator

1. Name: Dr. Shyam
Designation: Consultant Physician

2. Name : Ms Simi
   Designation : Staff Nurse

3. Name : Mr Rahim
   Designation : Service Engineer

4. Name : Mr Vipin
   Designation: Biomedical Engineer

**Group 4 - Oxygen Concentrator**

1. Name : Mr Babin Cyriac
   Designation : Biomedical engineer

2. Name : Mr Ajl Anto Chalissery
   Designation : Nurse

3. Name : Mr Sinoy P K
   Designation : Manufacturer

4. Name : Mr Muhammed Shafi P
   Designation : Respiratory Therapist

**Group 5 - ECG Machine**

1. Name : Ms Anita Raj
   Designation : Service and Application Engineer

2. Name : Ms Ardra Viswananth
   Designation : Doctor

3. Name : Mr Ajesh Jayakumar
4. Name: Mr Leio A V  
   Designation: Research Analyst

5. Name: Ms Greeshma varghese  
   Designation: Nurse

6. Name: Mr Shaiju Teeyes  
   Designation: Patient

**Group 6 - Ventilator**

1. Name: Mr K V padmanaban  
   Designation: Pulmonologist

2. Name: Mr Akhil S Nair  
   Designation: Biomedical Engineer

3. Name: Mr Vipin  
   Designation: Managing Partner

4. Name: Ms Jessy Jophy  
   Designation: Nursing Tutor

5. Name: Mr Sanoop Balakrishnan  
   Designation: Service Engineer

**Group 7 - Heart-Lung Machine**

1. Name: Mr Milan L  
   Designation: Biomedical engineer

2. Name: Ms Aparana Sreejith  
   Designation: Medical Superintendent
TIMELINE

**Biomed 360** started in the Month of July 2020 and has undergone various stages of team works including learning and understanding the concept and principles of equipments. The campaign is expected to be completed by year end.

**MAY – JUNE**: Brainstorming  
**JULY**: Call for Volunteers and Campaign Initiation  
**AUGUST**: Team setting and guideline confirmation  
**SEPTEMBER**: Mentor allocation and Initial Works  
**OCTOBER**: Understanding equipment under Mentors  
**NOVEMBER**: Logo launch in Instagram Page  
**DECEMBER - FEBRUARY**: Interview with professionals  
**MARCH 5**: video release

**ANTICIPATION FROM THE IEEE EMBS GLOBAL TEAM**

The team has successfully completed its first phase of campaign with our active set of volunteers and professionals from our area of network. Since the support and response, we’ve received is immense, we would like to expand our community to a global team for wider audience. For this we’ve a couple of humble requests from the IEEE EMBS team. They are as follows:

- Certificates for our leader groups, professionals, mentors and our volunteers for their active participation.
- Goodies from EMBS for our professionals and mentors as a token of appreciation for enlightening and igniting our minds on various topics.
- An appreciation letter from the global team for our campaign which would add as a fuel for our further campaigns.
- Global access for interaction with international acknowledgements and professionals from across the world for networking opportunities for our embs members and volunteers.
- Internship opportunities, Project funding and training support for our members and volunteers.
- And finally, Financial assistance from your global team to further proceed with our campaign’s stability and providing exposure to a wider audience.
APPRAISALS

The initiative found its true meaning with the wonderful feedback from team members after the "Get to know more about the equipment" phase of the campaign. The following are the very few words from the heart of the team members.

★ "Biomed 360 Campaign is totally a different experience. Got so many new contacts in my field. Got to know more about the equipments. It's really good" - Linda

★ "Campaign was really a good platform. Got good contacts and a peer group. It's informative and a good opportunity to learn and interact" - Hitha

★ "I am not the same person who joined this campaign. I have gained a bit more knowledge in various equipments and also I have gained many new friends which I consider as something really precious. Confidence to speak out is what I feel has really been an advantage and this would really help me in the long run" - Swetha

★ "Campaign is really good and I have learnt and done so many new things and still learning. Great team work and awesome mentors. All are supportive" - Shanty

★ "When I joined the campaign I didn't have much idea what this is upto. I became a part with the thought that as a biomedical student I can get to know about some equipments. But now what, this campaign gave me a different experience. I have done many things that I might not have done without this Campaign. Thanks for giving such a wonderful platform" - Aghna

★ "I am happy to be part of this campaign because I get to know more about equipment so far and truly speaking I was able to build my computer skills like video making, word files etc. Still on learning a lot from this campaign. Most happy to have some contacts among the members in biomedical field" - Agnus

★ "Campaign is so great. I have never been a part of any campaign before. So, for me this is a different experience. And thank you so much for giving this opportunity" - Jeny

★ "Yeah...Really the campaign seems to be really a big opportunity for all of us to interact with and to share different perspective on a single topic in different fields. I felt really good and happy that I am a part of this campaign. I have learnt and improved some of my skills through different activities here. Looking forward to do more with this great team" - Rosemol
“This campaign is a great opportunity to learn about a device in depth. This campaign helped in making new connections, getting information from professionals, team work, etc are working pretty well. I didn’t know that it will be such an informative thing when I joined. It will be very helpful to embrace our careers” - Amrith

“Getting to know about biomedical equipments from mentors is the most interesting thing about this campaign and getting in connection with biomedical professionals is the next best part. Creative tasks and interaction with new friends help to develop and improve the skills within giving more confidence to go ahead” - Greeshma

“Really this is great, because with this we could learn new things, we can interact with others. Without this campaign I would not be knowing about these many things in my Field. All the works done for the campaign is giving us exposure to the field. I understood the importance of team work from here” - Ann

“To be frank I had least expectations about this campaign when I joined the group. But the way things work here made me realise that this group can bring a change to the view of common people about equipments. The event is well organised and the hierarchical work distribution everything is well implemented as planned though it is taking time. The comfortable atmosphere for people to work taking the individual time is appreciable. With improved team spirit and better execution I am sure we as a team can take this campaign to the next level. Thankyou for the contacts and mentors given from here so far. I am also thankful to everyone in the team for that constant push given to us, to complete the works, which we all need in this lazy quarantine schedule. Happy volunteering” - Ajeena

Presented By
Ms Jiby Krishna KG
IEEE Volunteer