



DON BOSCO INSTITUTE OF TECHNOLOGY, MUMBAI
DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION
ENGINEERING

IEEE-DBIT STUDENT BRANCH

Report on Alumni Talk by Dr. Tom Sebastian

Topic: “Skills for an Antenna and Microwave Design Engineer”

Date: 06th August, 2020

Time: 5:00 - 6:00 p.m.

Venue: Zoom Meeting (Online Platform)

Speaker: Dr. Tom Sebastian, Senior Antenna Engineer and Team Lead, JEM Engineering, Laurel, Maryland, USA

Target Audience: B.E

No of participants registered: 68

No of participants attended: 48

Description:

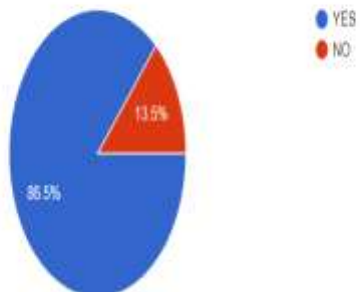
- The IEEE student chapter of DBIT organized an alumni talk on “Skills for an Antenna and Microwave Design Engineer” on the 6th of August, 2020.
- The session commenced with a Welcome address by Mrs. Freda Carvalho, Professor, DBIT Mumbai, followed by an introduction of the speaker Dr. Tom Sebastian, Senior Antenna Engineer and Team Lead, JEM Engineering.
- Following the introduction, Mr. Tom Sebastian took over and started the session by giving a brief introduction to his background in the field and his education.
- Further, he continued by sharing some examples of Antenna Designs in the market such as Low Profile, broadband, conformal antennas, magnetodielectric antennas, Dish feed Antennas, etc.
- The speaker then proceeded by talking about the importance of EM, Microwaves and Antennas and how many choose not to pursue the respective field due to complexity of the mathematics involved.
- Further, the speaker shed light on how Microwave and Antenna systems are very complex and precise and hence it’s difficult to prototype at the university level.

- Mr. Sebastian also illustrated what to expect in this field as well as the pros and cons of electromagnetics.
- He continued by explaining required skills to do well in exams, to get a job, skills to keep a job and how one can advance in a career.
- He moved on to explain the most important thing to get a job which was a good personality. He continued by explaining that the approach to finding a solution was important rather than the memory of complex equations taught in schools and colleges.
- He talked about the fundamentals of EM such as Antenna Design. He talked how fundamentals are a key part in technical interviews. He also gave an insight on the required software and equipment's that students should integrate into their learning such as COMSOLL, MATLAB, Oscilloscope, Spectrum Analyzer etc.
- Before concluding his address, the speaker discussed about the management skills required in a job and finally gave an insight on the current trends in the field of EM, Antennas and Microwave Engineering such as IoT, 5G Antennas, Space Antenna systems etc., and how IEEE helps in keeping its members up to date on these topics.
- After the address, the session was open to a Q&A session with the participants. The questions were selected from the participants from the zoom call and Mr. Sebastian addressed all of them very meticulously.
- The session was concluded with the Vote of thanks delivered by Mr. Shreyas Kulkarni, Chairperson, IEEE- DBIT, after which the participants were requested to fill the feedback forms circulated on the WhatsApp groups.

Feedback Analysis:

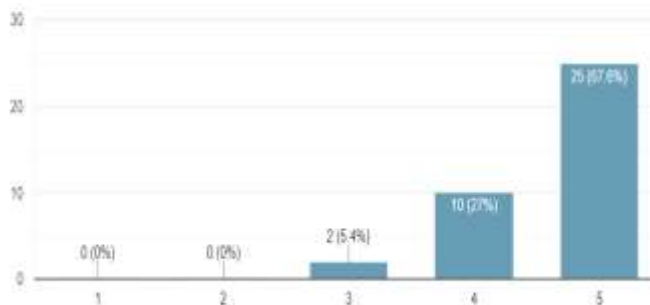
Are you interested in participating in future lectures or workshops which fall in this category?

37 responses



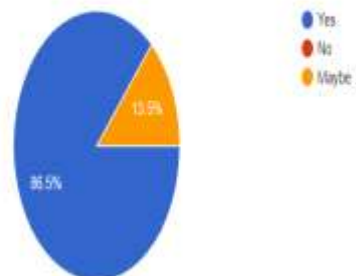
Overall, the session was informative and valuable

37 responses



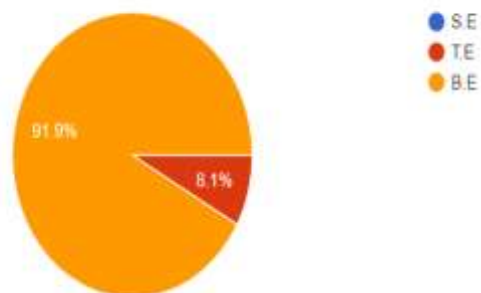
Did this event make you aware of the current trends in the field of Microwave Engineering?

37 responses



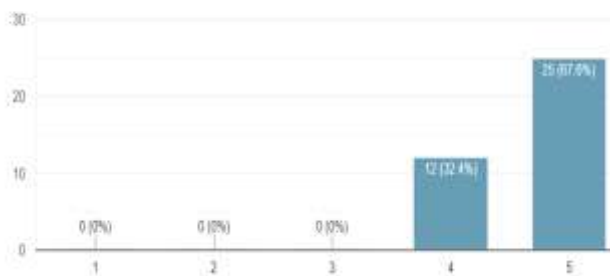
YEAR

37 responses



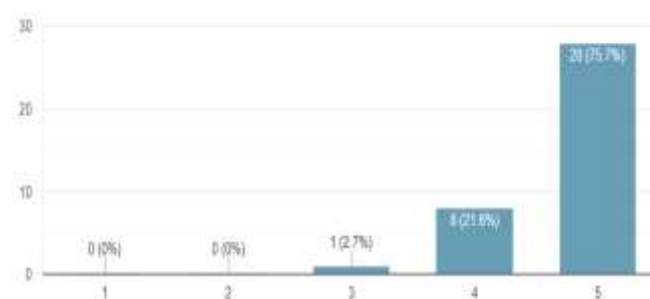
The session was relevant to the audience and well organized

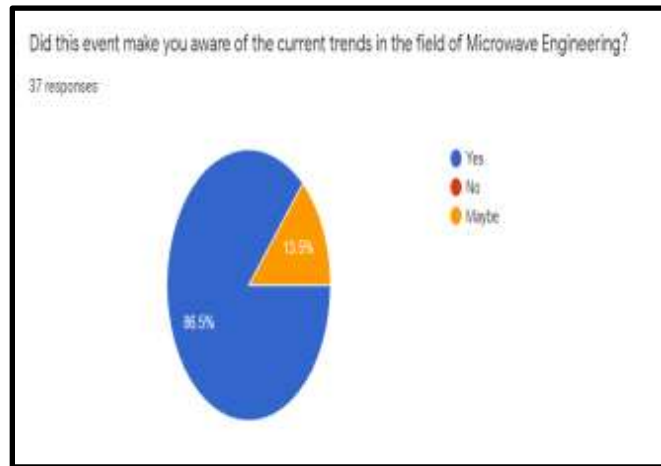
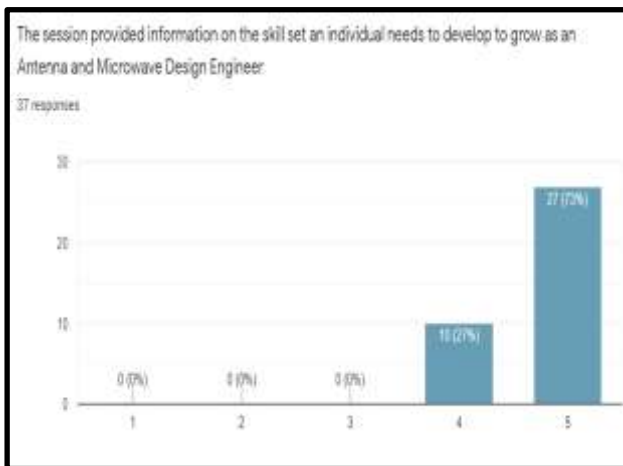
37 responses



The Speaker responded to questions in an informative, appropriate and satisfactory manner

37 responses







Summary of Webinar Analysis:

From the above analysis we can see the overall reception to the webinar was positive. The majority of the participants were from B.E followed by the T.E. The bulk of the participants felt that the overall webinar was satisfactory and informative. As reflected by the feedback, the webinar helped many by creating awareness on the current trends in microwave engineering. A High number of the participants are interested in future webinars.

Event Poster:


DON BOSCO INSTITUTE OF TECHNOLOGY, MUMBAI
 DEPARTMENT OF ELECTRONICS & TELECOMMUNICATION ENGINEERING
 PRESENTS
AN ALUMNI TALK ON
Skills for an Antenna and Microwave Design Engineer


 **5 PM IST**
 **06/08/2020**

Dr. Tom Sebastian (Batch of 2006)
 Senior Antenna Engineer & Engineering Team Lead, JEM Engineering,
 Laurel, Maryland, USA

- PhD in Electrical Engineering; Arizona State University, Phoenix, Arizona; Majors in Electromagnetics, Microwave & Antenna Design.
- Has been a vital part of many "Concept to Final Product" cycles in Commercial & Defence systems.
- Currently managing Antenna System Engineering projects.

EVENT PICTURES:

What to expect in these fields?

- Pursue a particular field based on your interest...
- ▶ **ELECTROMAGNETICS**
 - ▶ Pros: Lot of Math and pure Physics, cutting edge science, great for academics.
 - ▶ Cons: Lot of Math and pure Physics, fewer opportunities to explore in industry.
- ▶ **ANTENNAS & MICROWAVES**
 - ▶ Pros: More engineering orientated. Hands on approach. Easier to pick up. More variety.
- In-reality these fields are inter-connected with emphasis on a topic based on your career path.

Other interesting topics

- ▶ Artificial Magnetic Conductors(AMC) or High Impedance surfaces.
 - ▶ Papers by Dan Sievenpiper
- ▶ Frequency Selective Surfaces (FSS)
- ▶ Radar Systems: impulse radar
- ▶ Radome Design (EM)
- ▶ Material measurement
 - ▶ Dielectric
 - ▶ Magnetic
 - ▶ High Temperature Dielectric

Bottom line..

- The field of EM, Microwave and Antennas is ever expanding and ubiquitous in this current age.
- It is not all math and long equations! There is an art behind it. It is more of an applied science and engineering.
- Fundamentals will take you a long way in this field.
- You have two options Academia or Industry.
 - ▶ Academia lets you explore new ideas and concepts and teach the next generation of engineers.
 - ▶ Going into Industry will let you see your designs come to life and you see its impact in day to day life.
- At the end of the day, do what you love, do what you enjoy and do what you are passionate about. It is not all about getting good grades. Real life is more about applying what you have learned and not reciting equations.
- Finally, enjoy your time with your friends and family. You are bound to long and miss these moments in the future. Make sure you don't regret anything.
- ▶ THANK YOU!

Some Examples of Antenna Designs in my career.

- ▶ Low profile, broadband, Conformal antennas.
- ▶ Magnetodielectric Antennas
- ▶ Ground Penetrating Radar System
- ▶ Wireless Communication Antennas (Laptops, tablets and cellphones)
- ▶ Dish feed antennas
- ▶ Phased Array Antennas
- ▶ Antenna Beamforming network systems

Let us classify Engineering skills into categories.

EM, Antennas & Microwave Engineering Skills

- Skills to do well in exams. → Math, Memory & Logic
- Skills to get a job. → Fundamentals
- Skills to keep the job. → Fundamentals + Software + Soft skills
- Skills to advance career. → Fundamentals + Software, Management skills + Soft skills

More on Fundamentals (Antennas & Microwaves)

- ▶ Fundamentals are all you need most of the time to succeed at technical interviews.
 - ▶ Fundamental Antenna parameters is the most important along with Basic Transmission Line theory.
 - ▶ Understand Fundamental Terms: Gain, Directivity Efficiency, Radiation pattern, beamwidth, etc.
 - ▶ Your client is going to give you Design Requirements based on these parameters.

Report Prepared by: Mr. James Robin K (Reporting Head)

Report Approved by: Ms. Gejo George (IEEE-DBIT SB Counselor)