NEWSLETTER

ELECTRONICS & COMMUNICATION

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THE FLIP FLOPS

A QUARTERLY ECE NEWSLETTER
JANUARY 2023

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

School of Studies in Engineering and Technology
Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G)

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Desk of Hon'ble Vice Chancellor

I truly agree with the saying that " You are what you think". You all have taken a wise decision to join this University. If you want to change the outside, you must first change the inside. You must change the attention of your thoughts because what you think directly influences how you feel, and how you feel directly influences how your body reacts, and how your body reacts directly influences how you behave, and how you behave comes to define who you are and what you experience in life.

Prof. Alok Kumar Chakrawal
Vice Chancellor, Guru Ghasidas vishwavidyalaya

LIFE EXPERIENCES

Life is all about experience. Every experience teaches you life lessons, which will help you in future." **Information is not knowledge.The only source of knowledge is experience.You need experience to gain wisdom." -** Albert Einstein

I appreciate the great efforts poured by the exceptional team. This quarterly journal is proving itself very helpful for the students to get acquainted with the recent trends and happenings in the Electronics and Communication Engineering department

PROF. ALOK KUMAR CHAKRAWAL

alochak69@gmail.com

Address by the Registrar

Prof. Manish Shrivastava
Registrar, Guru
Ghasidas Vishwavidyalaya

Newsletters present valuable insights into the happenings inside the department. They encourage students who are our future engineers, to think and innovate. In particular, newsletter provide exposure and understanding to the first-year students about course of engineering. This newsletter also records the achievements and various activities of the department. I hope this publication will be successful in achieving these objectives.

BEST WISHES

I am delighted to know that Department of Electronics and Communication Engineering of the School of Studies in Engineering and Technology is publishing the third volume of its quarterly newsletter- "The Flip-Flops"

Education is an integration of academic and professional learning which builds a strong foundation among future professionals. In the current era of technological advancements, students need a few catalysts to stimulate their potential and appropriate guidance to help them make the right choices at the right time.

PROF. MANISH SHRIVASTAVA

ggv.registrar@gmail.com

Message From Dean

The Department of Electronics and communication Engineering publishes the 4th quarterly magazine "**Flip-Flops**". I have closely monitored the operations of various campaigns and other departments. The recent "MSME Industrial Visit" is a good and decisive encouragement for students to gain work experience. This magazine allows students to showcase their talents and explore their creative possibilities.

Prof. Sharad Chandra Srivastava
Dean, SoS(E&T)

Ambition of HOD

Dr. Soma Das
HOD, ECE Dept.

Our vision is to be recognized as innovative and leading Department. Our goal is to provide students with a balance of intellectual and practical experiences that enable them to serve a variety of societal needs. In our department students are nurtured to become best in project Managers or Team leader in Industry or become Entrepreneurs in their own innovative way

— Dr. Soma Das

DEPARTMENTAL ACTIVITIES

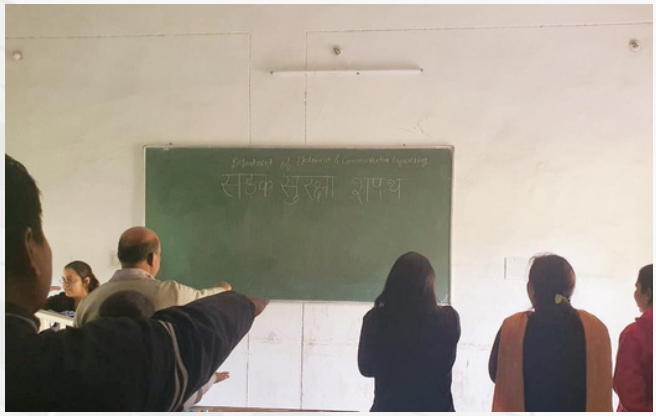
INDUSTRIAL VISIT PHASE -II

In today's rapidly changing technological environment, students must understand how businesses operate on the inside. Keeping this in mind, the Department, in collaboration with the Industry Institute Interaction Cell, SoS(E&T) GGV, successfully conducted the 2nd phase of the Industrial Visit at MSME, Durg, on December 22, 2022. A total of 39 students from the 3rd and 4th year participated in the event. The teachers available during the session were Mrs. Praveena Rajput (Asst. Prof. ECE), Mrs. Bhawna Shukla (Asst. Prof. ECE), Mr. Jitendra Bhardwaj (Asst. Prof. ECE), and Chandan Tamrakar (Asst. Prof. ECE).

The session started with detailed information about the workshop used in MSME, which includes the Computer Numerical Control (CNC) System, where students got information about the CNC Milling Machine, CNC Lathe Machine, CNC Electrical Discharge Machine, and CNC Grinding Machine under the guidance of Mr Imran Khan sir. Further, students were informed about the pneumatic lab, where they learned about programmable logic controllers (PLCs) and supervisory control and data acquisition (SCADA), guided by Mr Manoj Kumar Soni. Mr Dinesh Das, the sir, taught the students about hydraulics in depth during the program. At last, the students were taken to the Computer Hardware and Networking Lab, where the main focus was on the third layer of the OSI Model, i.e., the network layer.

ROAD SAFETY OATH

The Department organized a pledge ceremony on “Road Safety” for all the faculties and students of the department on 12 December 2022 at 11:00 am. in the department building. The faculties present were Mr. PS Srivastava, Mrs. Beaulah Nath, Mrs Pragrati Patharia, Mrs. Praveena Rajput, Mrs. Nikita Kashyap, Mrs. Anita Khanna, Dr. Anil Kumar Soni, Mr. ChandanTamrakar, Mr. Jitendra Bhardwaj and students of final year.



On 12 Dec Dept. of ECE Organized pledge for road safely at 11.00am GOs fell on that day following faculty. Ees, were present Be

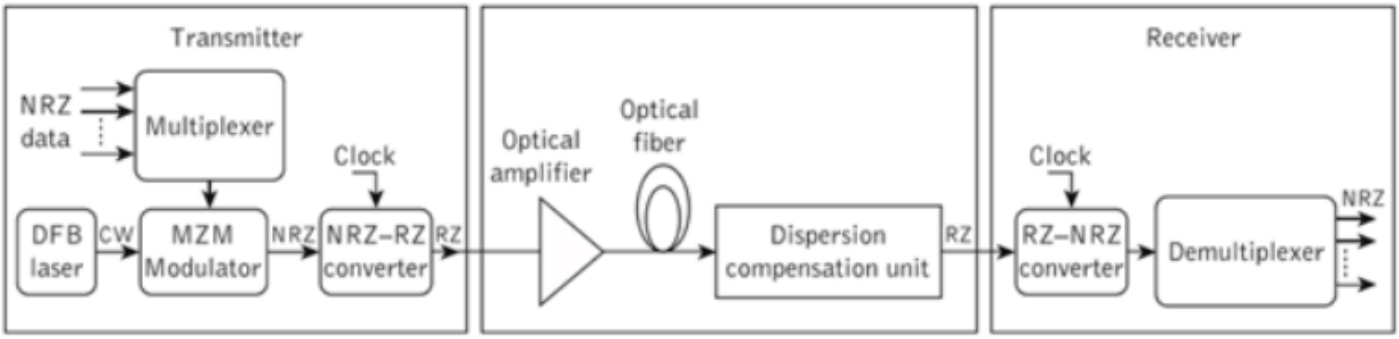
Mr. PS Srivastava, Mrs. Beaulah Nath, Mrs P. Patharia Mrs. Praveena Rajput, Mrs. Nikita Kashyap, Mrs. Anita Khanna, Dr. Anil Kumar Soni, Mr. Chandan
Tamrakar, Mr. Jitendra Bhardwaj and students of final year

ARTICLES

SOLITON TRANSMISSION

Mrs Pragati Patharia
Asst. Prof. (ECE)

Soliton transmission is a balancing act that offsets two major classes of pulse degradation in optical fibers to improve the quality of signal transmission. One type of degradation is the dispersion that causes pulses to spread in duration as they travel through long lengths of fiber.



Solitary waves are waves that travel alone and are not affected by other waves. There are two types of solitary waves, spatial and temporal. The formation of solitary waves comes from the nonlinear properties of the medium. The natural properties of light to disperse in space are being compensated by the nonlinearity of the medium in such a way that the higher intensity part of an optical beam (typically in the center of a Gaussian beam) increases the value of the refractive index of the medium forming a de facto core of waveguide that is responsible to confine in reverse a dispersed light to the middle of the beam itself. This can be easily understood if the induced nonlinearity is very high, as the beam gets focused towards this area. On the other hand, if the induced nonlinearity is less or none, the beam will be spatially dispersed.

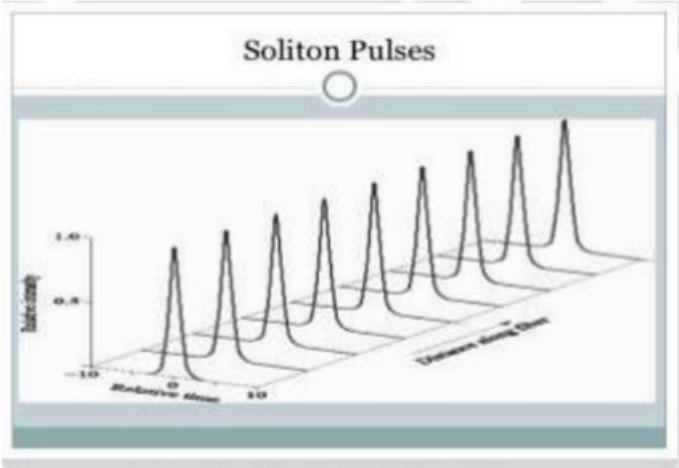
PROGRESS IN SOLITON TRANSMISSION IN OPTICAL FIBRES

WDM is a technology which multiplexes the number of optical carrier signal onto a single optical fibre by using different wavelength parallel. TDM is a system which transmits and receive the independent signals over a common signal path. We describe an inline modulation scheme up to 80Gbit/s per channel and its 2-channel WDM transmission over 10000Km. With small dispersion swing

SOLITON AMPLIFIERS There is fibre loss which occurs due to loss of energy which is observed by the fibre as the pulse wave propagates through a fibre. Such losses cause broadening on solitons. These losses are compensated using amplification. There are two types of amplification

a) Lumped amplification

b) Distributed amplification



PULSE COMPRESSION is a process in which optical pulse gets compressed. There are 2 types of pulse compressor:

- Soliton effect compressor
- b)Grating fibre

SOLITON BIT RATE Most of the commercial wavelength division multiplier (WDM) systems replace the traditional nonzero (NRZ) and return to zero (ZR) modulation. TIMING JITTER Each soliton carries a bit of information which is separated from each other, this separation is only possible when soliton pulse width becomes much shorter than bit rates. Soliton jitter as the result of amplified noise which is responsible for bit rate error.

CONCLUSION Soliton-based optical communication is very beneficial for long distance transmission without any attenuation and has a very high information carrying capacity. Soliton transmission in optical fibre played a very essential and useful function in the communication system. However, there are certain issues with the soliton transmission application, even if optical solitons are being used more and more.

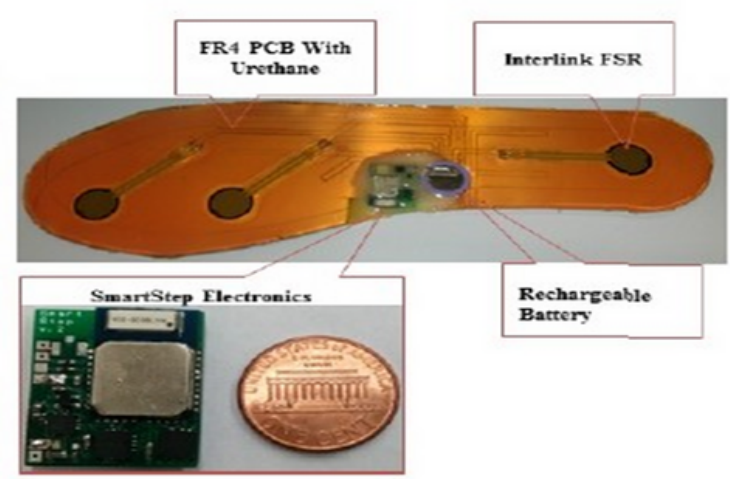
We sincerely expect that additional research in this area will pave the way for the use of optical transmission in cutting-edge technologies in the future.

SMART STEP TECHNOLOGY

Siddharth Rusiya
2nd year

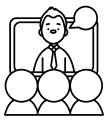
The insole-based wearable sensor (SmartStep) has its electronics fully embedded into a generic insole, which is usable with a large variety of shoes and, thus, resolves the need for shoe modification. Shoe-mounted wearable sensors can be used in applications, such as activity monitoring, gait analysis, post-stroke rehabilitation, body weight measurements, and energy expenditure studies.

The Smart Step is an always-on electronic device that comprises a 3D accelerometer, a 3D gyroscope, and resistive pressure sensors implemented around system-on-chip with an 8051-processor core, Bluetooth low energy (BLE) connectivity, and flash memory buffer. The Smart Step is wirelessly interfaced with an Android smartphone application with data logging and visualization capabilities. Several tests are conducted on this technology that illustrates the power consumption for several possible usage scenarios and the reliability of the data retention method. The results of the mechanical reliability test on the Smart Step indicate that the pressure sensors in the Smart Step tolerated prolonged human wear. The Smart Step system collects more than 98.5% of the sensor data, in real usage scenarios, having intermittent connectivity with the smartphone. The current implementation of the Android application (App) is based on Google's most recent Android version 4.4.2. The app can scan for available SmartStep servers, connect to the server, search for the available services from the server, read/write characteristic variables in the server and enable/disable notifications from the server.



The app user can select whether the data retention mechanism is needed for the data logging session and also whether the SmartStep needs to read the gyroscope or not. During the session, the sensor data notified by the SmartStep can be displayed on the screen in real-time. In other words, utilizing the SmartStep technology is the beginning of a new era in technology

FACULTY ACHIEVEMENTS



FDP/CONFERENCE/EXPERT TALK ATTENDED:

S.No	Faculty Name	Title of the Event
1	Dr. Nikita Kashyap	One Week FDP on "MATLAB-Artificial Intelligence and Optimization Techniques" by Dept of Electrical Engineering, NITTR Chandigarh
2	Mrs. Anita Khanna	Implementation of NEP- 2020 for university & college
3	Mr. Jitendra Bhardwaj	One Week FDP on "MATLAB-Artificial Intelligence and Optimization Techniques" by Dept of Electrical Engineering, NITTR Chandigarh
4	Dr Nipun Kumar Mishra	Microwave, Antennas and Propagation Conference 2022 (MAPCON-22)
5	Mr. Sumit Kumar Gupta	Microwave, Antennas and Propagation Conference 2022 (MAPCON-22)
6	Chandan Tamrakar	Personality Development through National Service Scheme (NSS)
7	Dr. Anil Kumar Soni	Direct Indirect Relationship and Carrier Guidance
8	Mrs Pragati Patharia	Facility, Support and various welfare schemes

PUBLICATIONS :

S.No	Faculty Name	Paper Title
1	Dr. Nikita Kashyap	Identification of putative therapeutic candidates of plasmodium falciparum by in-silico comparative genomics analysis
2	Mrs. Anita Khanna	Automated pathological lung volume segmentation with anterior and posterior separation in X-ray CT images

Glimpse of our Faculties at IEEE MAPCON

Upcoming Events:

- ECE Lecture Series - 4
- Inauguration of the IEEE Student Chapter

STUDENTS ACHIEVEMENTS

Aditya Raj
2nd year
1. Winner of gfg department logo competition
2. And selected for software development trainee at logicalloops UK

Aanchal Singh
2nd year
Intern @Presear Softwares Pvt. Ltd

Yogendra sahu
2nd year
Represented GGV university team in East Zone National level Basketball tournament. Enrolled as cadet in NCC Army regiment.

Rishabh Upadhyay
Final year
Published his research paper in IJEAIS journal titled ”VGA Monitor Interfacing”.

STUDENTS EXPERIENCE

Miss. Aditi Sharma, Research Scholar in the Department presented a research paper entitled **" Isolation improvement in MIMO using PRSR with DGS for Wireless Application" at Microwave, Antennas and Propagation" Conference 2022 (MAPCON-22)**

Amrit Raj
(Final year)

Amrit Raj got selected for seven days **National Integration Camp** (NIC) under **National Service Scheme** (NSS) held at Maharshi Dayanand University, Rohtak, Haryana from 7th to 13th December 2022. This seven days camp was sponsored by Ministry of Youth Affairs and Sports, Government of India and Department of Higher Education, Haryana. NSS volunteer Mr. Amrit Raj, a student of B.Tech 8th Semester had participated in this camp. He took part in cultural dance performance, nukkad natak, integration rally in traditional costume and other activities. Overall, his performance was excellent in this camp. He was well appreciated by the team leader of Chhattisgarh and Madhya Pradesh Dr. Vikas Chandra (NSS Program Officer).

PLACEMENTS :

High-Technext Engineering and Telecom Pvt. Ltd.	Murshid Raza	2.6 LPA
High-Technext Engineering and Telecom Pvt. Ltd.	Amit Mishra	2.6 LPA
High-Technext Engineering and Telecom Pvt. Ltd.	Virendra Yadav	2.6 LPA
High-Technext Engineering and Telecom Pvt. Ltd.	Koushik Ghosh	2.6 LPA
High-Technext Engineering and Telecom Pvt. Ltd.	Praveen Thakre	2.6 LPA
Tech Mahindra	Prince Jaiswal	3.25 LPA
Tata Consultancy Services	Prince Jaiswal	3.6 LPA
Hexaware Technologies	Rishabh Upadhyay	6 LPA

UNTIL THE NEXT TIME

Thank you for your patience while we have been working on the next edition of the Electronics and Communication Engineering Newsletter. We have finally finished it and we are happy to send it to you. The acknowledgement note that I would like to include in the next edition of the News- letter is attached. I would also like to include a few wishes for the future in the next edition.

- IEEE Inauguration Ceremony
- ECE lecture Series 4.

Contact us :

Email :ecenewsletter.ggv@gmail.com

Address : Department of ECE, GGV

Our Team

Amrit Raj
Student Coordinator

Anil Kumar Soni
Faculty Coordinator

Praveena Rajput
Faculty Coordinator

Rishabh Upadhyay
Editorial Lead

Vikas Jonwal
Pre-final Year
GD Co-lead

V. Jyothiraaditya
Pre-final Year
GD lead

Kajal Kumari
Pre-final Year

Yash Gupta
Pre-final Year

Madhuri Koona
2nd Year

Nishant Gaurav
2nd Year