

**Name:** Dr. Varun Jain

**Designation:** Assistant Professor

**Subject:** Mathematics

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### **Education**

**M.Sc. Mathematics** (2004, Punjabi University, Patiala (PB)),

**National Eligibility Test (NET)-2010**

**Ph.D.** (16<sup>th</sup> June, 2015, Punjabi University, Patiala)

**Title of Ph. D Thesis:** The geometry of GCR-lightlike submanifolds of indefinite almost contact manifolds.

### **Professional Experience:**

- Department of Mathematics, M.M. Modi College, Patiala, Punjab, India (16<sup>th</sup> July, 2012 to till date)
- Department of mathematics, SGGSW University, Fatehgarh Sahib, Punjab, India (2<sup>nd</sup> August 2011 to 16<sup>th</sup> July, 2012)
- Department of Applied Science, BGIET, Sangrur, Punjab, India, (17<sup>th</sup> August, 2006 to 1<sup>st</sup> August, 2011)

### **Teaching Interests:**

- Differentiable Manifolds
- Differential Geometry
- Complex Analysis
- Algebra

### **Research Interest:**

Differentiable Manifolds and Geometry of Indefinite metric

### **Achievements, Awards and Recognitions**

- Awarded with **Innovative Educationist award** in two days International Conference on Contemporary in Science and Management Research during 7-8 January, 2023 by Research Education solution, Sidhvi Foundation.
- Awarded with Smt Lata Kamlesh Memorial Award for “**Young Geometer**” in National Conference on Differential Geometry and General Relativity during 28-29 November 2017 organized at the department of Mathematics, Sardar Patel University, Vallabh Vidhyanagar, Gujrat(India) and Tensor Society of India.
- Successfully organized **One international conference and Two National Conferences.**
- Presented Paper in Workshop on Contact and Poission geometry, West University of Timisoara, on October 31<sup>st</sup>-November 02, 2019.

### **Ph.D. Students**

## Completed

1. Amrinder Pal Singh , “ Geometry of Null hypersurfaces of Lorentzian manifolds with rigging technique”. ( Registration Date :-21-08-2019), ( Award of Degree Date- 28-02-2024)

## Enrolled

1. Saurav

## Publications

1. Amrinder Pal Singh, Cyriaque Atindogbe, Rakesh Kumar, **Varun Jain**, “ *Rigged scalar curvature on Null hyper surface of GRW spacetimes*” **Publicationes Mathematicae Debrecen** , Vol(104) 1-2 (7), page no (137-157)(2024) - DOI: 10.5486/PMD.2024.9646.
2. Amrinder Pal Singh, Cyriaque Atindogbe, Rakesh Kumar, **Varun Jain** “*Normalised null hyper surface of Indefinite Kahler manifold*”, **Internatioonal Electronic journal of Geometry**, Vol(16) No-1, page no 417-434(2023). <https://doi.org/10.36890/iejg.1148612>
3. **Varun Jain**, Satvinder Singh Bhatia, Rakesh Kumar “ *Induced Ricci type tensors of GCR-lightlike submanifolds of indefinite Sasakian manifolds*” **Palestine Journal of Mathematics** ,Vol. No. 11(1) (2022) , (260-271) . [https://Vol 12\(2\), 2023 |PJM \(ppu.edu\)](https://Vol12(2),2023|PJM(ppu.edu))
4. **Varun Jain**, Rachna Rani, Rakesh Kumar “*On GCR-lightlike submanifolds of indefinite Kaehler manifolds*” **Journal of Geometry and symmetry in physics** ,Vol. No. 63 (2022) , (21-37) . [http://geometry.imbm.bas.bg/jgsp/jgsp\\_files/vol63/volume63cont.html](http://geometry.imbm.bas.bg/jgsp/jgsp_files/vol63/volume63cont.html)
5. Amrinder Pal Singh, Cyriaque Atindogbe, Rakesh Kumar, **Varun Jain**, “ *Chen-like inequalities on Null hypersurfaces with closed rigging of a Lorentzian manifolds*” **International Journal of Geometric Methods in Modern Physics** ,Vol.18, No. 8 (2021) 2150125 <https://doi.org/10.1142/S0219887821501255>
6. **Varun Jain**, Amrinder Pal Singh, Rakesh Kumar, “*On the geometry of lightlike submanifolds of indefinite statistical manifolds*” **International Journal of Geometric Methods in Modern Physics** , 17 (70) 2050099 (2020) <https://doi.org/10.1142/S0219887820500991>
7. **Varun Jain**, Rachna Rani, Rakesh Kumar and R. K. Nagaich , *Some characterization theorem on holomorphic sectional curvature of GCR-lightlike submanifolds*, **International Journal of Geometric Methods in Modern Physic**, 14 (3) (2017), 1750034 (18 pages). <https://www.worldscientific.com/doi/abs/10.1142/S0219887817500347>

8. **Varun Jain**, Rakesh Kumar and R. K. Nagaich (2013), *Non existence of totally contact umbilical GCR-lightlike submanifolds of indefinite Kenmotsu manifolds* , **Hacettepe Journal of Mathematics and Statistics**, 44(1)( 2015) , 83-91.  
<http://www.hjms.hacettepe.edu.tr/uploads/cfe71992-4f2c-42b0-a011-28f1996c8650.pdf>
9. **Varun Jain**, Rakesh Kumar and R. K. Nagaich (2013), *Integrability of distributions in GCR-lightlike submanifolds* , **Mathematical Sciences And Applications E-Notes** 1(2), (2013), 1-10. <https://dergipark.org.tr/en/pub/mathenot/issue/19482/207638>
10. Varun Jain, Rakesh Kumar and R. K. Nagaich (2012), *Integrability of distributions in GCR-lightlike submanifolds of indefinite Sasakian Manifolds*, **Kyungpook Mathematical Journal** , 53(2013), 207-218.  
<http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.671.3945&rep=rep1&type=pdf>
11. Varun Jain, Rakesh Kumar and R. K. Nagaich (2012), *Non existence of totally contact umbilical GCR-lightlike submanifolds of indefinite Cosymplectic manifolds*, **Vietnam Journal of Mathematics**, DOI 10.1007/s10013-013-0010-x.  
<https://link.springer.com/article/10.1007/s10013-013-0010-x>
12. Varun Jain, Rakesh Kumar and R. K. Nagaich (2012), *Integrability of distributions in GCR-lightlike submanifolds of indefinite Cosymplectic manifolds*, **Lobachevskii Journal of Mathematics**, **34** (1), (2013), 76–84.  
<https://link.springer.com/article/10.1134/S1995080213010071>
13. Varun Jain, Rakesh Kumar and R. K. Nagaich (2012), *On GCR-lightlike product of Indefinite Cosymplectic manifolds*, **International Journal of Mathematics and Mathematical Sciences**, Volume 2012, Article ID 605816, 12 pages.  
<https://www.hindawi.com/journals/ijmms/2012/605816/>
14. Varun Jain, Rakesh Kumar and R. K. Nagaich (2011), *Totally Contact Umbilical GCR-lightlike submanifolds of indefinite Sasakian manifolds*, **Vietnam Journal of Mathematics**, Vol. 39:1 (2011), 91-103. (MR2841638)  
<https://www.hindawi.com/journals/amp/2011/983069/>
15. Rakesh Kumar, Varun Jain and R. K. Nagaich (2011), *GCR-lightlike product of indefinite Sasakian manifolds*, **Advances in Mathematical Physics**, Volume 2011, Article ID 983069, 13 pages. (MR2801348) <https://www.hindawi.com/journals/amp/2011/983069/>

## **Book/Book chapter**

1. A text book on the topic of “ **Calculus**” jointly written by D.R. Sharma and **Varun Jain** , Dr Iekh and Taru Mittal published by **Sharma Publishing** in July, 2023, Jalandhar with ISBN-No.: 978-93-92109-61-4.
2. A text book on the topic of “**Basic Mathematics**” jointly written by D.R. Sharma and **Varun Jain** published by **Sharma Publishing** in Jan, 2022, Jalandhar with ISBN-No.: 978-93-81-261-95-8.
3. A text book on the topic of “ **Analytic Geometry**” jointly written by D.R. Sharma and **Varun Jain** published by **Sharma Publishing** in Jan, 2021, Jalandhar with ISBN-No.: 978-93-5181-332-3.
4. A text book on the topic of “ **Calculus-II**” jointly written by D.R. Sharma and **Varun Jain** published by **Sharma Publishing** in July, 2020, Jalandhar with ISBN-No.: 978-93-5181-331-6.
5. A text book on the topic of “ **Analytic Geometry**” jointly written by D.R. Sharma and **Varun Jain** published by **Sharma Publishing** in Jan, 2018, Jalandhar with ISBN-No.: 978-93-82-704-58-4.
6. A text book on the topic of “**Basic Mathematics**” jointly written by D.R. Sharma and **Varun Jain** published by **Sharma Publishing** in Jan, 2016, Jalandhar with ISBN-No.: 978-93-81-261-95-8.
7. A book entitled “**Calculus**” jointly written by D.R. Sharma, and **Varun Jain** has been published by **Sharma Publishing** in June 2014, Jalandhar with ISBN-No.: 978-93-82704-52-2.
8. A text book on the topic of “**Mathematical Foundation of Computer Science**” jointly written by D.R. Sharma and **Varun Jain** published by **Sharma Publication** in June 2014, with ISBN NO.: 978-81-261-95-8.
9. A text book on the topic of “**Co-ordinate Geometry**” jointly written by O.P.Arora and **Varun Jain** published by **Dinesh Publication** in June 2013, with ISBN NO.: 978-81-7608-657-8

## **Conference / Seminars**

### **A) Resource Person / Invited Lectures:**

1. Delivered an invited talk on ‘**Exposition of Theory on Lightlike submanifolds of indefinite sasakian manifolds**’ in 5<sup>th</sup> National Conference on recent trends in Mathematical Sciences-2024 (NCR-TMS-2024) on 21-22 March 2014 organized by School of Mathematics, Shri Mata Vaishno Devi University, Katra, Jammu & Kashmir.
2. Delivered an invited talk on ‘**The Geometry of Lightlike submanifolds of indefinite sasakian manifolds**’ in International conference on Innovations in computational and physical Sciences for

sustainable development (ICPSSD-2022) on 21-23 December 2022, organized by VSK University, Ballari, Karnataka.

3. Acted as a resource person in onw day workshop on Youth Empowerment Through Skill Development organized by Centre for Research in Rural and Industrial Development (CRRID), Chandigarh on February 21,2024.
4. Acted as an Key Note Speaker in Webnair on Topic “Significance of Mathematics in real life” On 24<sup>th</sup> January, 2022, organized by Department of Mathematics, University College, Ghanaur, Patiala.
5. Acted as an Expert during Hand-on practice sessions in Two days national workshop on “**Effective Technical Writing Using LaTeX**” during 22-23<sup>rd</sup> October, 2019 organized by P.G. Department of Mathematics, Mata Gujri College, Fatehgarh Sahib, Punjab.
6. Delivered a talk on “ **An introduction to the geometry of pointwise slant lightlike submanifolds**” in 4th National conference on Recent Trends in Mathematical Sciences during 13<sup>th</sup> to 14<sup>th</sup> December 2019 organized by Department of Mathematics, Shri Mata Vaishno Devi University, Katra, Jammu and Kashmir, India.
7. Acted as an Expert during Hand-on practice sessions in Three days national workshop on “**Research Methods and Data Analysis Using SPSS**” during 29<sup>th</sup> to 31<sup>st</sup> Marc 2019 organized by Department of Basic and Applied Sciences, Punjabi University, Patiala (Punjab)
8. Acted as an Expert during Hand-on practice sessions in Three days national workshop on “ **LaTeX and Technical Writing**” during 23<sup>rd</sup> to 25<sup>th</sup> November 2018 organized by Department of Basic and Applied Sciences, Punjabi University, Patiala (Punjab)
9. Delivered a talk on “ **Geometry of Real Half-lightlike submanifold of indefinite Kaehler manifolds**” in National conference on Recent Advances in Mathematics during 4<sup>th</sup> to 5<sup>th</sup> October 2018 organised by Department of Mathematics, Central University Jammu, Jammu and Kashmir, India.
10. Delivered a keynote lecture in one week National workshop on “**Latex and Matlab: Indispensable Tools for Researcher**” during July 31<sup>st</sup> –August 5<sup>th</sup>, 2017 organised by Department of Applied Science, Guru Kashi University, Talwandi Sabo, Bathinda (Punjab)
11. Delivered a Expert lecture in FDP on “**Effective technical writing using LaTeX**” during 3<sup>rd</sup> to 7<sup>th</sup> July 2017 organised by CSE Department Baba Banda Singh Bahadur engineering College, Fatehgarh sahib (Punjab).
12. Delivered an invited talk on ‘**Screen conformal lightlike submanifolds of Semi-Riemannian manifolds**’ in a UGC-sponsored National Conference on Topology, Analysis, Algebra, and its applications on 7<sup>th</sup>-8<sup>th</sup> March 2017 organized by Department of Mathematics, Shri Mata Vaishno Devi University, Katra, Jammu & Kashmir

13. Delivered an extension lecture on “**Analytic Function**” on August 17, 2015, at Govt. Mohindra College, Patiala.

### **B) Paper presented:**

#### **International Conference Abroad**

1. Presented a paper entitled “*On Induced Ricci Type Tensor of GCR-Lightlike Submanifolds of Indefinite Sasakian Manifolds*” in Workshop on Contact and Poisson geometry, West University of Timisoara, on October 31<sup>st</sup>-November 02, 2019.

#### **International Conference**

1. Presented a paper entitled “*Lightlike submanifolds of indefinite Sasakian manifolds*” in International Conference on “Differential Geometry and Relativity” held on 18<sup>th</sup> to 20<sup>th</sup> May, 2023 jointly organised by Department of Mathematics, SSJ University, Almora and BTKIT, Dwarahat Uttarakhand, India in collaboration with The Tensor Society, India.
2. Presented a paper entitled “*On existence of unique screen distribution of lightlike submanifolds of semi-Riemannian manifold*” in 24<sup>th</sup> International Conference CONIAPS-XXIV held on 9<sup>th</sup> to 11<sup>th</sup> August 2019 at Chaudhary Charan Singh University, Meerut(U.P.)
3. Presented a paper entitled “*Holomorphic Sectional curvature of GCR-lightlike submanifolds*” in International Conference on Gravitation, Cosmology and Mathematical Physics held on 4<sup>th</sup> to 6<sup>th</sup> April 2019 organised by Department of Mathematics & Physics, GLA University, Mathura (U.P.), India in collaboration with The Tensor Society, India.
4. Presented a paper in 21<sup>st</sup> International Conference of International Academy of Physical Sciences on Symbiotic Development of Mathematical, Physical, Chemical and Computational Sciences” during 28<sup>th</sup> to 30<sup>th</sup> October 2017 organised by Department of Mathematics, Guru Jambheshwar University of Science and Technology, Hisar (Haryana), India.
5. Presented a paper entitled “ **Geometry of Lightlike Submanifolds of indefinite Trans Sasakian Manifolds**” in International Conference on Differential Geometry, algebra and Analysis organized by Department of Mathematics, Jamia Milia Islamia, New Delhi, during 15<sup>th</sup>-17<sup>th</sup> November 2016.
6. Presented a paper entitled “**Mathematical Application in financial Decision making**” in “1<sup>st</sup> international Conference ETCMES-2016” at Government Mohindra College, Patiala, Punjab on 15<sup>th</sup> -16<sup>th</sup> January 2016
7. Presented a paper entitled “*Radical Transversal lightlike submanifolds of indefinite Kaehler manifolds*” in “**18th International Conference of International Academy of**

**Physical Sciences on Recent Trends in Physical Sciences**”, organized by Faculty of Sciences, University of Allahabad, Allahabad, during 22-24 December 2015.

8. Presented a paper entitled “**GCR-lightlike submanifold of indefinite S-manifolds**” in “**International Conference on Emerging Areas of Mathematics for Science & Technology**” organized by Department of Mathematics, Punjabi University, Patiala during 30th January to 1st February 2015.
9. Presented a paper entitled “**Generic lightlike submanifolds of indefinite Kaehler manifolds**” in International Conference on Algebra, Geometry, Analysis and Their Applications organized by Department of Mathematics, Jamia Milia Islamia, New Delhi, during 27-29 November 2014.
10. Presented a paper entitled “**GCR-lightlike submanifolds of indefinite S-manifolds**” in International Conference on Differential Geometry and its Applications organised by Department of Mathematics, Jadavpur University, Kolkata in collaboration with The Tensor Society, during 16-18 October 2014.
11. Presented a paper entitled “**GCR-lightlike submanifolds of indefinite S-manifolds**” in International Conference on Mathematical Modeling and Statistical Analysis (RMMSA-2014) organized by PG Department of Mathematics, JC DAV College, Dasuya, Hoshiarpur, on September 30, 2014.
12. Presented a paper entitled “**Radical Transversal Lightlike Submanifolds of Indefinite Kaehler manifolds**” in International Conference on Advances in Pure and Applied Mathematics, organized by the Department of Mathematics, Government Degree College, Haripur (Manali), Himachal Pradesh, during 7-9 March 2014.
13. Presented a paper entitled “**Non existence of totally contact umbilical GCR-lightlike submanifolds of indefinite Kenmotsu manifolds**” in International Conference on Differential Geometry and Relativity, organized by Department of Mathematics, Deen Dyal Upadhyaya Gorakhpur University, Gorakhpur in collaboration with The Tensor Society, during 09-11 November 2013.
14. Presented a paper entitled “**Characterization of Holomorphic Sectional Curvature of GCR-lightlike submanifolds of indefinite Nearly Kaehler manifold**” in International Conference on Information and Mathematical Sciences organized by the Department of Mathematics, Baba Farid College of Engineering and Technology, Bathinda, Punjab, during 24-26 October 2013.
15. Presented a paper entitled “**Integrability of distribution of GCR lightlike submanifolds of indefinite Kenmotsu manifolds**” in International Conference in Mathematical Sciences organized by the Department of Mathematics, Government Degree College, Haripur (Manali), Himachal Pradesh, during 8-9 March 2013.
16. Presented a paper entitled “**Ricci tensor of a GCR-lightlike submanifold of an Indefinite asakian space form**” in International Conference on Differential Geometry and Relativity organized by Department of Mathematics, Aligarh Muslim University, Aligarh in collaboration with The Tensor Society, during 20-22 November, 2012.

17. Presented a paper entitled “**Integrability of distribution of GCR lightlike submanifolds of indefinite Kenmotsu manifolds**” in International Conference on Differential Geometry, Functional Analysis and Applications (ICDGFAA-12), organized by Department of Mathematics, Jamia Millia Islamia, New Delhi during 08-10 September 2012

### **National Conference**

1. Presented a paper entitled “**Flipped learning for permuting Deeper understanding of Mathematics in classroom**” in National seminar on National Education Policy-2020: Journey towards holistic education held on 25 March, 2023 organized at the S,D Kanya Mahavidyala, Mansa, Punjab (India) sponsored by ICSSR, New Delhi.
2. Presented a paper entitled “**On Holomorphic Sectional curvature of GCR-lightlike submanifolds**” in National Conference on Differential Geometry and General Relativity held on 28-29 November 2017 organized at the Department of Mathematics, Sardar Patel University, Vallabh Vidhyanagar, Gujarat (India) and Tensor Society of India.
3. Presented a paper entitled “**Characterization of Holomorphic sectional Curvature of GCR-lightlike submanifold of an indefinite nearly Kaehler manifold**” in SERB-DST sponsored National conference on “**Recent advancement in Science, Commerce and Technology,**” held on 5th & 6th April 2016 at Mata Sahib Kaur Girls College, Talwandi Sabo, Bathinda(Punjab).
4. Presented a paper entitled “**Lightlike submanifold of an indefinite trans-sasakian manifolds**” in National Seminar on “**Latest trends in Algebra and Analysis**” sponsored by UGC organized by Department of mathematics, Guru Nanak Khalsa College, Karnal(Haryana) held on 19th March 2016.
5. Presented paper entitled “**Lightlike submanifolds of indefinite Trans-Sasakian manifolds**” in “**81st Annual Conference of The Indian Mathematical Society**”, organized by Department of Mathematics and Department of Computer Science & Engineering, Visvesvaraya National Institute of Technology, Nagpur, India, during 27th - 30th December 2015
6. Presented a paper entitled “**Geometry of GCR-lightlike Submanifolds**” in “**National Conference on Recent Developments in Mathematical Modelling & Fuzziology**” organized by Department of Applied Science, Chandigarh University, during 28th -29th October 2015.
7. Presented a paper entitled “**Integrability of GCR-lightlike submanifolds of indefinite Kaehler manifolds**” in “**National Conference on Recent Trends in Mathematical Sciences**” organized by School of Mathematics, Shri Mata Vaishno Devi University, Katra, Jammu & Kashmir, during 8-9 October 2015.
8. Presented a paper in entitled “**Holomorphic Sectional Curvature of GCR lightlike submanifolds**” in National Conference on Differential Geometry and its Applications organized by Department of Mathematics, University of Allahabad, Allahabad, during 27-28 December 2014.



### **Workshops and training courses**

1. Participated in UGC- sponsored Interdisciplinary refresher course on “**Mathematics and Statistics**” organised by UGC-MMTTC(HRDC), Punjabi University, Patiala from 4-16 December, 2023.
2. Attended two weeks Refresher Course in Mathematics ( Them: Python & Vedic Maths) organized during 13-26 July, 2023 obtain A<sup>+</sup> grade organized by Teachet Learning Centre & Department of Mathematics, Ramanujan College, University of Delhi, under MMMNMTT.
3. Attended and participated in open house discussion on NEP 2020-Policy Praxis on 8<sup>th</sup> May, 2023 organised by Internal Quality Assurance Cell (IQAC) , Multani Mal Modi College, Patiala(Punjab).
4. Attended "**Teacher Enrichment Workshop (TEW) on Computational Methods for solving Differential Equations**", organized by Department of Mathematics, Punjab Technical University, Kapurthala, Punjab, n collaboration with National Centre of Mathematics during May 25<sup>th</sup> to 30<sup>th</sup> December , 2019.
5. Participated in one week Faculty Development Programme (FDP) on Emerging Issues nd Challenges in Higher education 17<sup>th</sup> to 22<sup>th</sup> July, 2019 organised by Internal Quality Assurance Cell (IQAC) , Multani Mal Modi College, Patiala(Punjab), India.
6. Participated in one week Faculty Development Programme (FDP) on Contemporary issues in Higher Education from 20<sup>th</sup> to 26<sup>th</sup> July, 2018 organised by Internal Quality Assurance Cell (IQAC) , Multani Mal Modi College, Patiala(Punjab), India.
7. Participated in UGC- sponsored refresher course organised by UGC-HRD centre , Punjabi University, Patiala from 2<sup>nd</sup> January to 21<sup>th</sup> January, 2017.
8. Participated in 28<sup>th</sup> Orientation programme organised by UGC-HRD centre , Punjabi University, Patiala from 18<sup>th</sup> april to 14<sup>th</sup> may, 2016.
9. Attended “**Workshop on Leadership & Advocacy**” organized by Rajiv Gandhi National Institute of Youth Development, Regional Centre 25<sup>th</sup> to 31<sup>st</sup> May, 2015 at M.M. Modi College, Patiala.
10. Attended UGC sponsored “**National Workshop on Research Tools in Mathematics**”, organizedby Department of Mathematics, Mata Gujri College, Sri Fatehgarh Sahib from 19<sup>th</sup> December to 25<sup>th</sup> December 2014.
11. Attended UGC Sponsored Faculty Development Program at Multani Mal Modi College, Patiala. (1-15 July, 2014)

12. Attended "**Teacher Enrichment Workshop (TEW) on Finite Group Theory**", organized by Department of Mathematics, Punjabi University, Patiala in collaboration with National Centre of Mathematics during May 27 to June 2, 2014.
13. Attended "**Instructional School for Lecturers on Topology and Geometry**" organized by Harish Chandra Research Institute, Jhansi, Allahabad in collaboration with National Centre for Mathematics and Advanced Training in Mathematics, during 16-28 December, 2013.
14. Attended a workshop on "**National e-Governance Plan**", organized by University Computer centre, Punjabi University, Patiala in collaboration with Department of Information Technology and Ministry of Communications & Information Technology, Government of India on 22nd December, 2011.
15. Attended a "**Workshop on Differential Geometry**", organized by DST Centre for Interdisciplinary Mathematical Sciences (CIMS), Banaras Hindu University, Varanasi, during 02-11 May, 2011

#### **Online Workshops / Short term courses and FDP.**

1. Participated and successfully completed online **Refresher Programme** on Management, Business, Administration – Present and Post Crisis Organized by Continual & Advanced Learning Lounge (CALL), SA Curricula Advanced Support System, S. A. College of Arts and Science, Chennai ( Tamil Nadu) from 14th April 2020 to 04th May 2020.
2. Participated and completed **one day online workshop** on "Book and Article publishing and Springer link Platform Demonstration" organized by School of Education , GNDU, Amritsar in collaboration with MHRD, Govt. of India and Springer Nature on April 22, 2020.
3. Participated and successfully completed **Short Term Training Programme (STTP : 2020)** from April 26<sup>th</sup> – May 9<sup>th</sup>, 2020 on "IS - INNOVATION, INCUBATION, INTRAPRENEUR, INVENTION & INTELLECTUAL PROPERTY" Organized by Centre by IP Law (C-IPL) of SA Centre for Constructive Learning and Systematic Research, S. A. College of Arts and Science, Chennai( Tamil Nadu) to commemorating the World IP Day
4. Participated and completed **5 Days Online Faculty Development Program (FDP)** on R Programming organised by Indo Global Group of Colleges, New Chandigarh in association with IIT Bombay Spoken Tutorial (An Initiative of National Mission on Education through ICT, MHRD, Govt. of India) from 27th April to 1st May 2020.
5. Participated in One day online FDP on Intellectual property rights in collaboration with Rajiv Gandhi National institute of Intellectual property Management, GOI and IQAC of S.A. Jain College, Ambala city on 19<sup>th</sup> May 2020.
6. Participated and completed **one day online workshop** on EMPOWERING EFFECTIVE SCIENTIFIC RESEARCH BY HARNESSING THE POWER OF WEB OF SCIENCE

& MANAGING REFERENCES USING ENDNOTE organized by School of Education , GNDU, Amritsar in collaboration with MHRD, Govt. of India and Clarivate Analytics on May 20, 2020.

7. Participated in **7 days National level workshop** on Research Methodology From June4 – 10<sup>th</sup> 2020 By PCMA.
8. Participated and completed **one day online FDP** on “E-content development” organized by department of Computer Science, S.A. Jain (PG) College, Ambala City, Haryana on 20<sup>th</sup> June, 2020.
9. Participated and completed **online FDP in Pure and Applied Mathematics**, organized by PG and Research Department of Mathematics , Jamal Mohamed College, Tiruchirappalli, from 11<sup>th</sup> – 17<sup>th</sup> June, 2020.
10. Participated and completed **2 weeks FDP** on “Advanced concept on developing MOOCS” organized by teaching learning centre , Ramanujan College, Delhi sponsored by MHRD, PMMMNM on Teachers and Teaching on 2<sup>nd</sup> July to 17<sup>th</sup> July, 2020.
11. Participated in **Refresher Course** : Mathematics and Statistics Science organized by UGC-HRD centre , Punjabi University, Patiala from 16<sup>th</sup> to 28<sup>th</sup> november, 2020.

### **Webinar**

1. Participated in Two days online Seminar on “Research Ethics and IPR toward Copyright and Patent Filing” Jointly organized by IQUAC and IP Cell, St Claret College, Bangalore on Aril 29-30, 2020 in association with KSCST and CSI.
2. Participated in Two days National Webinar on “General Awareness and Stress Management in COVID-19 Pandemic” and “ How to Boost your Immunity” organized by Mahila Vidyalaya PG College,Lucknow, Uttar Pradesh on May 20-21, 2020
3. Participated in National webinar on Entrepreneurial Skills organized by department of Commerce , Guru Nanak Khalsa College, Yamuna Nagar, Haryana on 26<sup>th</sup> May , 2020
4. Participated in National webinar on Bringing Happiness to life organized by J.Z. Shah Arts and H.P. Desai Commerce College, Amroli , Sural, Gujrat on 28<sup>th</sup> May, 2020.
5. Participated in one day International webinar on Post COVID challenges before India education system organised by Multani Mal Modi College, Patiala on 29<sup>th</sup> May, 2020.
6. Participated in National Webinar on Academic integrity and Ethics in higher education institution organised by Department of Computer Science, Arya Girls College, Ambala Cantt, Haryana on 31st May, 2020.
7. Participated in webinar “Cyber Security: Need of an hour of new India” Organized by Govt. Arts and Commerce college, At. Netrang, Dist. Bharuch, Gujrat held on 1<sup>st</sup> June, 2020 at 4:00pm on Zoom.
8. Participated in “Online International seminar on effective Transitioning from Traditional (T) Class to Virtual (V) class teaching” Organized by Punjab Commerce & Management association held on 2<sup>nd</sup> June, 2020.

9. Participated in National webinar on “Post COVID challenges and Atmanirbhar Bharat” organized by J.Z. Shah Arts and H.P. Desai Commerce College, Amroli , Sural, Gujrat on 3<sup>rd</sup> June, 2020 at 3:45P.M. to 5:30 PM on Google Meet.
10. Participated in National webinar on “Indian Economy in Post Covid: Prospects and Challenges” organized by Department of Economics, T. H. K. Jain College, Cossipore, Calcutta.
11. Participated in National webinar on “ The universe and Mathematical Modelling” organized by Applied Mathematics, JSSATE, Noida held on 11<sup>th</sup> June, 2020.
12. Participated in two days National webinar on “Explore mathematics to new dimensions in Pandemic: Covid-19” organized by Department of Mathematics and Statistics, Mohanlal Sukhadia University, Udaipur, Rajasthan held on 12-th -13<sup>th</sup> June, 2020.
13. Participated in National webinar on “Youth Empowerment and Nation Building” organized by J.Z. Shah Arts and H.P. Desai Commerce College, Amroli , Sural, Gujrat on 16<sup>th</sup> June, 2020 at 4:00P.M. to 5:30 PM on Google Meet.
14. Participated in National webinar on “Almost C(alpha)-manifolds and its classification” organized by Department of First year, Poornima college Engineering , Jaipur held on 19<sup>th</sup> June, 2020.
15. Participated in National webinar on “Post Covid-19: Opportunities ahead of us” organized by Division of Mathematics, Social Science and Language, School of Advanced Sciences, VIT, Chennai held on 30<sup>th</sup> June, 2020.
16. Participated in “Online National capability enhancement conference: Education for meaning ful life Part-3” Organized by Punjab Commerce & Management association held on 2<sup>nd</sup> July, 2020.
17. Participated in 5 days Webinar on “Mathematical Prospective on Computational Science and Engineering” Organized by Department of Mathematics, Ramaiah Institute of Technology, Bangalore held on 6<sup>th</sup> -10<sup>th</sup> July, 2020.
18. Participated in Webinar on “Motivation on Perpetual Learning” Organized by KLE society degree college, Nagarbhavi, Bangalore held on 25<sup>th</sup> July, 2020.

### **Membership**

- Life member of **Indian Mathematical Society**.
- Life member of **International Association of Engineers**, Hon Kong, Membership No. 113412.
- Life member of **The Tensor Society**, India, Membership No. 70.
- Life member of **Indian Society for Technical Education**. India, Membership No. LM 53491.