



**SITARAMBHAI NARANJI PATEL**  
INSTITUTE OF TECHNOLOGY AND RESEARCH CENTRE, UMRAKH

A Vidyabharti Trust Institution  
Vidyabharti Campus, At. Ta. Bardoli, Dist. Surat-394345  
Ph.02622-224581, 220581 Fax : 02622-227481,225458  
Email : admin@snpitrc.ac.in, vbtdegree\_umrakh@yahoo.co.in  
Visit us on : www.snpitrc.ac.in

## APPLIED SCIENCE AND HUMANITIES DEPARTMENT



Two days Workshop Report on  
**“Mathematical Modelling & their  
Applications in Sciences & Engineering”**

8<sup>th</sup>-9<sup>th</sup> January, 2021



Department of Science & Technology  
Government of Gujarat

Organized by:



Applied Science & Humanities Department

S. N. Patel Institute of Technology & Research Centre

Umrakh- Bardoli

Sponsored by

**Gujarat Council on Science & Technology (GUJCOST), DST,  
Govt. of Gujarat**

Report Prepared by:

**Dr. Mansi N. Zaveri**



**SITARAMBHAJ NARANJ1 PATEL**  
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**APPLIED SCIENCE AND HUMANITIES DEPARTMENT**

**TITLE OF WORKSHOP**

**“Mathematical Modelling & their Applications in Sciences  
& Engineering”**

**CATEGORY**

**Workshop**

**DATE AND DURATION**

**8<sup>TH</sup> – 9<sup>TH</sup> January, 2021 (Two Days)**

**VENUE**

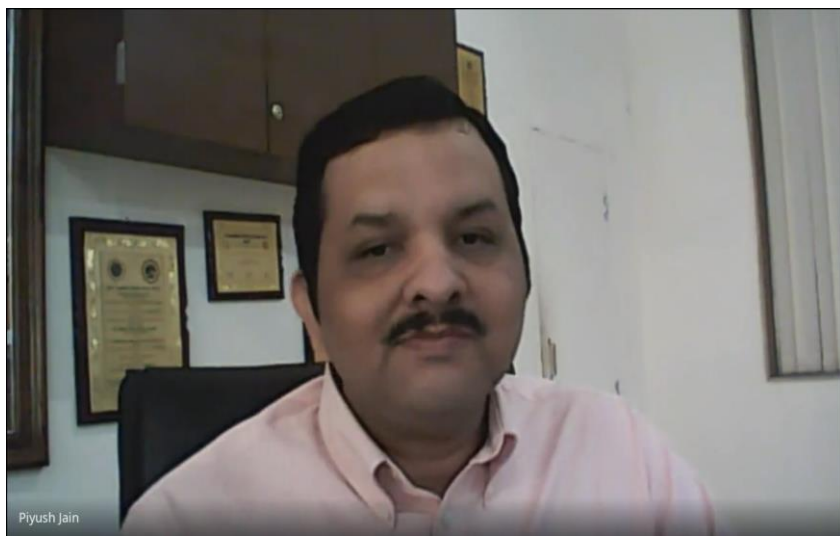
**(Online Mode)**

**Sitarambhai Naranji Patel Institute of Technology &  
Research Centre, Umrakh, Bardoli**



**APPLIED SCIENCE AND HUMANITIES DEPARTMENT**

**INAUGURAL FUNCTION**



**Dr. Piyush S. Jain**  
Principal,  
SNPIT & RC, Umrakh

**Dr. Mansi N. Zaveri**

I/C Head, ASH Dept.  
SNPIT & RC, Umrakh  
Coordinator of Workshop





## APPLIED SCIENCE AND HUMANITIES DEPARTMENT

### INVITED SPEAKERS/EXPERTS

#### Speaker-1

|                          |  |
|--------------------------|--|
| <b>Name</b>              | Dr. Jayesh M. Dhodiya  |
| <b>Designation</b>       | Associate Professor, Applied Mathematics & Humanities Department   |
| <b>Name of Institute</b> | Sardar Vallabhbhai National Institute of Technology, Surat   |
| <b>Contact Details</b>   | 9825347040   |
| <b>Topic of Lecture</b>  | <b>Session-1:</b> Mathematical Modelling on Real World Problems<br><b>Session-4:</b> Mathematical Modelling on Multiobjective Optimization |

#### Speaker-2

|                          |   |
|--------------------------|---|
| <b>Name</b>              | Dr. Kaushal B. Patel  |
| <b>Designation</b>       | Assistant Professor, Department of Mathematics,   |
| <b>Name of Institute</b> | Veer Narmad South Gujarat University, Surat   |
| <b>Contact Details</b>   | 9427541236  |
| <b>Topic of Lecture</b>  | <b>Session-2:</b> Mathematical Modelling on ODE<br><b>Session-5:</b> Mathematical Modelling on Linear Algebra |

#### Speaker-3

|                          |   |
|--------------------------|---|
| <b>Name</b>              | Dr. Mukesh T. Patel   |
| <b>Designation</b>       | Assistant Professor, Department of Mathematics,   |
| <b>Name of Institute</b> | Uka Tarsadia University, Bardoli  |
| <b>Contact Details</b>   | 6355158533  |
| <b>Topic of Lecture</b>  | <b>Session-3:</b> Digital Image Processing<br><b>Session-6:</b> Mathematical Modelling on PDE |



## APPLIED SCIENCE AND HUMANITIES DEPARTMENT

### REGISTERED PARTICIPANTS

| Sr. No. | Name                           | Institutions   |
|---------|--------------------------------|--|
| 1       | Soni Zeel A.                   | Snpit&Rc   |
| 2       | Dhairya Shah                   | Snpit  |
| 3       | Vibhuti Amrutbhai Patel        | Caet,Nau   |
| 4       | Dr Vipul Hasmukhbhai Mistry    | Snpit & Rc, Umrahk   |
| 5       | Dr. Nisha Soni                 | S.N.Patel Institute Of Technology And Research, Umrahk.                    |
| 6       | Jyoti Chaudhari                | Shree K.J.Polytechnic,Bharuch  |
| 7       | Kaushal Raval                  | Shankersinh Vaghela Bapu Institute Of Technology                           |
| 8       | Harshit Bhavsar                | Sal College Of Engineering   |
| 9       | Patel Mittal                   | Shankersinh Vaghela Bapu Institute Of Technology                           |
| 10      | Ashutosh Mishra                | Rgpv Bhopal  |
| 11      | Mihirbhai Lallubhai Prajapati  | B.V.P.I.T.(D.S),Umrahk,Baben Bardoli                                       |
| 12      | Jinal M. Naik                  | S. N. Patel Institute Of Technology And Research Center, Umrahk            |
| 13      | Parmar Roshani Kantibhai       | liht, Surat  |
| 14      | Dr. E. Rama Devi               | Ngm College  |
| 15      | Khyati J. Patel                | S.N.Patel Institute Of Technology And Research Center, Umrahk              |
| 16      | Raj Kamal Kaur                 | Lovely Professional University   |
| 17      | Abdul Razak Kaladgi            | P A College Of Engineering Mangalore                                       |
| 18      | Chaitra Sindagi                | National Institute Of Technology Karnataka                                 |
| 19      | Sarvam Kamleshbhai Patel       | Knowledge Institute Of Technology And Engineering, Bakrol                  |
| 20      | Rishekesh Ramesh               | Bannari Amman Institute Of Technology                                      |
| 21      | R Malarkodi                    | St Joseph College Of Engineering And Technology Thanjavur                  |
| 22      | Dr. Hiral Desai                | Laxmi Institute Of Technology, Sarigam(086)                                |
| 23      | G.Ramesh                       | Ars College Of Engineering, Tamilnadu                                      |
| 24      | Subhashree Behera              | Knowledge Institute Of Technology And Engineering                          |
| 25      | Mr. Chetankumar R. Sohaliya    | Narmada College Of Science And Commerce                                    |
| 26      | Dr. Pragna Kapil Lad           | Shroff.S.R.Rotary Institute Of Chemical Technology. Vataria                |
| 27      | Bhaveshkumar Jivanbhai Khasiya | Gtu  |
| 28      | Dr. Animesh Kumar Sharma       | Swami Vivekanand College Of Agricultural Engineering And Technology , Igkv |
| 29      | Himanshu Madhad                | Chemistry Department, Gujarat University                                   |
| 30      | Tejas B. Patel                 | Snpit & Rc, Umrahk   |
| 31      | Anita Choudhary                | Ggsipuniversity  |
| 32      | Akash Poddar                   | Jalpaiguri Government Engineering College                                  |
| 33      | Dr.K.Lenin                     | Prasad V. Potluri Siddhartha Institute Of                                  |



### APPLIED SCIENCE AND HUMANITIES DEPARTMENT

|    |                                  |  |
|----|----------------------------------|--|
|    |                                  | Technology.  |
| 34 | Mrs. Rani. S                     | Government Engineering College , Ramanagara            |
| 35 | Raval Hiral Parth                | L.D.College Of Engineering                             |
| 36 | Kinjal                           | Seti   |
| 37 | Dhavalkumar Kantilal Patel       | Gidc Degree Engineering College                        |
| 38 | Vaishali Apurva Adhwaryu         | L. D. College Of Engineering, Ahmedabad                |
| 39 | Parth Raval                      | L.D.College Of Engineering                             |
| 40 | Harshadkumar Patel               | Smt. S. R. Patel Engineering College, Unjha            |
| 41 | Koustav Dutta                    | Purulia Government Engineering College, West Bengal    |
| 42 | Mrinal Kanti Mandal              | Ramkrishna Mahato Government Engineering College       |
| 43 | Harshit Bhavsar                  | Sal College Of Engineering                             |
| 44 | Hardik G. Soni                   | Sal Institute Of Technology And Engineering Research   |
| 45 | Mrityunjay Malakar               | Purulia Government Engineering College                 |
| 46 | Pulkit Thaker                    | Sal Education Campus                                   |
| 47 | Nirali Chirag Shah               | Sal Institute Of Technology And Research               |
| 48 | Sweta Hardik Bhatt               | Sal College Of Engineering                             |
| 49 | Greeshma Nair                    | Sal College Of Engineering                             |
| 50 | Suresh G Sorathia                | Sal Institute Of Technology And Engineering Research   |
| 51 | Malvi Snehalkumar V.             | Sal Institute Of Tecnology & Engg.Research             |
| 52 | Dhiman Banerjee                  | Siem, Siliguri   |
| 53 | Dr. Sejal Desai                  | Sal Institute Of Technology And Engineering Research   |
| 54 | Niketa Pankajkumar Joshi         | Government Polytechnic Bhuj                            |
| 55 | Nili Patel                       | Sal Engineering & Technical Institute, Ahmedabad       |
| 56 | Prof.Rajankumar J Lad            | Gidc Degree Engineering College                        |
| 57 | Parth Desai                      | Sal Engineering And Technical Institute                |
| 58 | Patel Harshad Shantibhai         | Central Institute Of Plastics Engineering & Technology |
| 59 | Shah Samirkumar Amrutlal         | Sal Institute Of Technology And Engineering Research   |
| 60 | Zala Riddhi Mitesh               | Sal Institute Of Technology And Engineering Research   |
| 61 | Ashin K Sunny                    | Viswajyothi College Of Engineering And Technology      |
| 62 | Dr. Manishkumar Vishnubhai Patel | Sankalchand Patel College Of Engineering Visnagar      |
| 63 | Dr. Reena Gajanandbhai Patel     | Sankalchand Patel College Of Engineering, Visnagar     |
| 64 | Vikaskumar Bhavsar               | Sankalchand Patel College Of Engineering, Visnagar     |
| 65 | Dr. Vaishali Bhavsar             | Sal College Of Engineering                             |
| 66 | Urvi G. Trivedi                  | Sal College Of Engineering                             |
| 67 | M.V.Bhuvanewari                  | Lendi Institute Of Engineering And Technology          |
| 68 | G.Subinson                       | Dmi St John The Baptist University                     |
| 69 | Dr.B.Vijaya Lakshmi              | Mannar Thirumalai Naicker College                      |
| 70 | Kirit N. Kalariya                | Vvp Engineering College, Rajkot                        |
| 71 | Dhaval Mahendrabhai Vyas         | Vvp Engineering College, Rajkot                        |



### APPLIED SCIENCE AND HUMANITIES DEPARTMENT

|     |                                  |   |
|-----|----------------------------------|---|
| 72  | Aryan Kumar Sharma               | Laxmi Institute Of Technology, Sarigam                                  |
| 73  | Rinkaj Goyal                     | Ggs Indraprastha University, New Delhi                                  |
| 74  | Santosh Kumar Patro              | Jharkhand Rural Health Mission Society(Jrhms), Govt. Of Jharkhand       |
| 75  | Dr. Yusuf Perwej                 | Department Of Computer Science & Engineering                            |
| 76  | Riddhi R Patel                   | Dr. Jivraj Mehta Institute Of Technology                                |
| 77  | G.Ramachandran                   | Vmkvec  |
| 78  | Sudha Salvi                      | Bhagwan Mahavir University  |
| 79  | Sohil M Luhar                    | Grow More Faculty Of Diploma Engineering, Himatnagar                    |
| 80  | Prof.Bharat Suthar               | Grow More Faculty Of Engineering  |
| 81  | Chiragkumar Patel                | Hasmukh Goswami College Of Engineering                                  |
| 82  | Abdul Razak Kaladgi              | P.A College Of Engineering,Mangalore                                    |
| 83  | Dr. Nirav Vyas                   | Atmiya University   |
| 84  | Manojkumar Vitthalbhai Sheladiya | Atmiya University, Rajkot   |
| 85  | Sunil Bachani                    | Dr. Jivraj Mehta Institute Of Technology                                |
| 86  | Divyeshkumar Bhikhubhai Patel    | Lukhdhirji Engineering College, Morbi-2                                 |
| 87  | Sudha Patel                      | Sal Engineering And Technical Institute                                 |
| 88  | Dhaval Kumar S. Chaudhari        | Gidc Degree Engineering College Navsari                                 |
| 89  | Praveen Kumar Sharma             | Laxmi Institute Of Technology   |
| 90  | Dr.Hiral Desai                   | Laxmi Institute Of Technology,Sarigam.                                  |
| 91  | Divyesh M.Jaisar                 | Sal College Of Engineering  |
| 92  | Abirami A                        | College Of Engineering Guindy   |
| 93  | Dr. Sandipkumar R Panchal        | Knowledge Institute Of Technology And Engineering                       |
| 94  | Sangavi V                        | University Of Madras  |
| 95  | Shikha Bhatnagar                 | Rms Institute Of Science & Technology                                   |
| 96  | Dr.J.B.Veeramalini               | Vel Tech High Tech Dr Rangarajan Dr Sakunthala Engineering College      |
| 97  | Biswarup Modak                   | Engineering Institute For Junior Executives, Government Of West Bengal. |
| 98  | Vyom Sonagra                     | Shantilal Shah Engineering College                                      |
| 99  | Palash Kundu                     | Prafulla Chandra College  |
| 100 | Sameem Suha M                    | Thamirabharani Engineering College                                      |
| 101 | Ms. S. Karpaga Selvi             | National Engineering College, Kovilpatti.                               |
| 102 | Jagdeep Kumar                    | Sobhasaria Engineering College  |
| 103 | Modasiya Mohmadshafik A          | Grow More Faculty Of Engineering  |
| 104 | Dr. Anita Rani                   | Iec University, Baddi, H.P.   |
| 105 | M.Martin Charles                 | Loyola Icam College Of Engineering And Technology                       |
| 106 | M.Karthik                        | Sri Shakthi Institute Of Engineering And Technology                     |
| 107 | Dhruti Mayureshbhai Gadiwala     | School  |
| 108 | First Year B.E. & M.E. students  | Shri Sitarambhai Naranji Patel Institute of Tech. & RC, Umrakh          |



## APPLIED SCIENCE AND HUMANITIES DEPARTMENT

### PROGRAM SUMMARY

- To introduce mathematics behind the application areas of computing.
- To introduce the process of representing the fundamental concepts of real life problems.
- To learn various mathematical models that relates to real life.
- To provide directions for future research and development by identifying key problems and their viable solutions.
- The first session deals with the introduction and analysis of mathematical modelling on real world problems.
- The second session deals with mathematical models based on ordinary differential equations.
- The third session gives interesting information about digital image processing in context of mathematics.
- Multiobjective optimization and its uses in mathematical model was discussed in fourth session.
- Fifth session deals with the linear algebra based modelling.
- Modelling on partial differential equations was discussed in the sixth session.





**APPLIED SCIENCE AND HUMANITIES DEPARTMENT**

**WORKSHOP BROCHURE (PAGE-1)**

|   |  |  |
|---|--|--|
| <p><b>REGISTRATION FORM</b><br/>S. N. Patel Institute of Technology &amp; Research<br/>Centre, Umrakh-Bardoli, Surat<br/>Two Days Workshop<br/>on<br/>"Mathematical Modelling and their<br/>Applications in Sciences and Engineering"<br/>(8<sup>th</sup> &amp; 9<sup>th</sup> January, 2021)</p> <p>Name: _____<br/>Designation: _____<br/>Educational Qualification: _____<br/>Organization: _____<br/>Tel./Mobile No.: _____<br/>Email: _____</p> <p>Registration Link available at :<br/><a href="http://www.snpitrc.ac.in">www.snpitrc.ac.in</a></p>  <p><b>Note:</b><br/>There is no fee to participate in this workshop.</p> <p>Signature of Applicant _____<br/>Signature of HOD _____</p> <p>S. N. Patel Institute of Technology<br/>&amp; Research Centre, Umrakh-Bardoli, Surat</p> | <p><b>TECHNICAL ADVISORY COMMITTEE</b></p> <ul style="list-style-type: none"> <li>☉ Dr. Jayesh M. Dhodiya, Associate Professor, Applied Mathematics &amp; Humanities Department, SVNIT, Surat</li> <li>☉ Dr. Kaushal B. Patel, Assistant Professor, Dept. of Mathematics, VNSGU, Surat</li> <li>☉ Dr. Mukesh T. Patel, Assistant Professor, Department of Mathematics, UTU, Tarsadi, Surat</li> </ul> <p><b>ORGANIZING COMMITTEE</b></p> <p><b>Chief Patrons</b></p> <p>Shri. Manharbhai L. Patel<br/>(Managing Trustee)</p> <p>Shri. Kiritbhai N. Patel<br/>(Secretary)</p> <p>Shri. Ashwinbhai H. Patel<br/>(Co-Secretary)</p> <p><b>Patron</b></p> <p>Dr. Piyush S. Jain<br/>(Principal, SNPIT &amp; RC, Umrakh)</p> <p><b>Coordinator</b></p> <p>Dr. Mansi N. Zaveri<br/>(Assistant Prof. &amp; Head, ASH Department)</p> <p><b>Committee Members</b></p> <p>Prof. Khyati J. Patel<br/>Prof. Jinal M. Naik<br/>Prof. Tejas B. Patel</p> <p><b>ADDRESS FOR CORRESPONDENCE</b></p> <p>Dr. Mansi N. Zaveri<br/>Phone: +91-9925445089<br/>Email: mansi.zaveri@snpitrc.ac.in</p> <p>Prof. Jinal M. Naik<br/>Phone: +91-9429533128<br/>Email: jinal.naik@snpitrc.ac.in</p> <p>S. N. Patel Institute of Technology &amp; Research Centre, Umrakh-Bardoli, Surat</p> | <p>Two Days Workshop<br/>on<br/><b>Mathematical Modelling and their<br/>Applications in Sciences and<br/>Engineering</b><br/>(8<sup>th</sup> &amp; 9<sup>th</sup> January, 2021)</p> <p>Sponsored By</p>   <p><b>Coordinator</b><br/>Dr. Mansi N. Zaveri</p>   <p><b>Organized by</b><br/>Applied Science &amp; Humanities<br/>Department,<br/>S. N. Patel Institute of Technology<br/>&amp; Research Centre,<br/>Umrakh-Bardoli, Surat<br/>website : <a href="http://www.snpitrc.ac.in">www.snpitrc.ac.in</a></p> |
|---|--|--|



## APPLIED SCIENCE AND HUMANITIES DEPARTMENT

### WORKSHOP BROCHURE (PAGE-2)

#### ABOUT THE INSTITUTE

Vidyabharti Trust is the name associated with education for more than three decades near Bardoli of Surat district and has now evolved as a symbol of quality education dedicated to nurture the talent and aspirations of the bright youth of our nation.

S. N. Patel Institute of Technology & Research Centre is a premier institution approved by the All India Council for Technical Education (AICTE), New Delhi and affiliated with Gujarat Technological University (GTU), Ahmedabad, Gujarat. It was foresight to get talented Engineers in the field of Mechanical, Civil, Electrical, Chemical, Electronics & Communication & Computer Science Engineering. Institute also offers post graduation courses in the area of Construction Management (Civil) and Production Engineering (Mechanical).

#### ABOUT THE DEPARTMENT

Applied Science & Humanities Department was established since the inception of the S. N. Patel Institute of Technology & Research Centre, Umrakh, Bardoli in 2008 as a department which is dedicated to lay the foundation of students in fundamental sciences and basic humanities. The aim

of the department is to create dedicated engineers who prove to be authentic pillars that serve as a strong edifice of the nation. The department strives to impart quality education in the area of Applied Sciences and Humanities for the future technocrats of engineering streams.

#### OBJECTIVES OF THE PROGRAMME

- To introduce the mathematics behind the application areas of computing.
- To provide directions for future research and development by identifying key problems and their viable solutions.
- To introduce the process of representing the fundamental concepts of real life problems make uses all the branches of scientific knowledge and functions under different names.
- To share the concepts with the participants of various disciplines related to Mathematics to acquire the knowledge of recent developments in mathematical problems through lectures by reputed speakers.

#### FOCUS AREAS

- Introduction of mathematical modelling
- Applications of mathematical modelling on real world problems
- Applications of mathematical modelling regarding Linear Algebra and differential equations

#### FOR WHOM

The program will provide excellent opportunities for Faculties/Research Scholars/Students from Science and Engineering Department of different colleges.

#### REGISTRATION FEE DETAILS

The registration fees for participants are given below:

| Participants | Amount (in Rs.) |
|--------------|-----------------|
| Students     | 0/-             |
| Academicians | 0/-             |

#### RESOURCE PERSONS

Dr. Jayesh M. Dhodiya  
Dr. Kaushal B. Patel  
Dr. Mukesh T. Patel

#### IMPORTANT DATES

- **Last date for Registration** - 5<sup>th</sup> January, 2021
- **Confirmation of Seat** - 6<sup>th</sup> January, 2021





**SITARAMBHAI NARANJI PATEL**  
INSTITUTE OF TECHNOLOGY AND RESEARCH CENTRE, UMRAKH

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Visit us on : www.snpitrc.ac.in

**APPLIED SCIENCE AND HUMANITIES DEPARTMENT**

**PHOTOGRAPHS**

**BANNER OF WORKSHOP**

**S. N. Patel Institute of Technology & Research Centre, Umrakh**  
(A Vidyabharti Trust Institution)

**Applied Science & Humanities Department**

For Registration Visit [www.snpitrc.ac.in](http://www.snpitrc.ac.in)

Organizes  
**Two Days Workshop**  
on

Last Date for Registration  
**5<sup>th</sup> January, 2021**

**Mathematical Modelling and their Applications in Sciences and Engineering**

(8<sup>th</sup> & 9<sup>th</sup> January, 2021)

Principal  
**Dr. Piyush S. Jain**

**Dst**  
Department of Science & Technology  
Government of Gujarat

**SPONSORED BY**

Gujarat Council on Science & Technology (GUJCOST)  
Gujarat Council on Science & Technology (GUJCOST)

Coordinator  
**Dr. Mansi N. Zaveri**

Vidyabharti Campus, At & Po. Baben, Ta.: Bardoli, Dist.: Surat, Pin: 394601

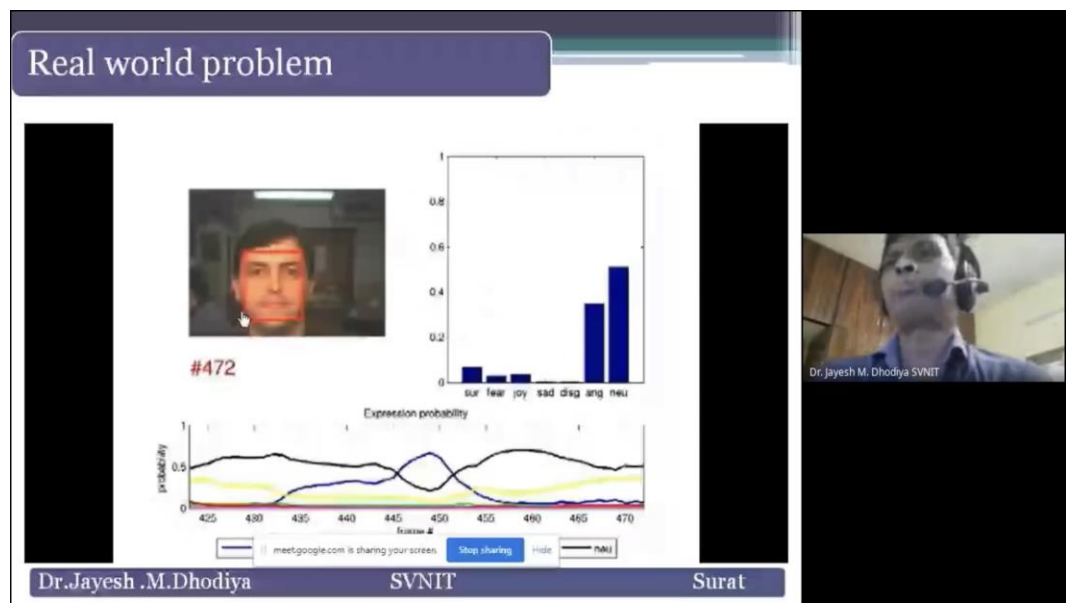
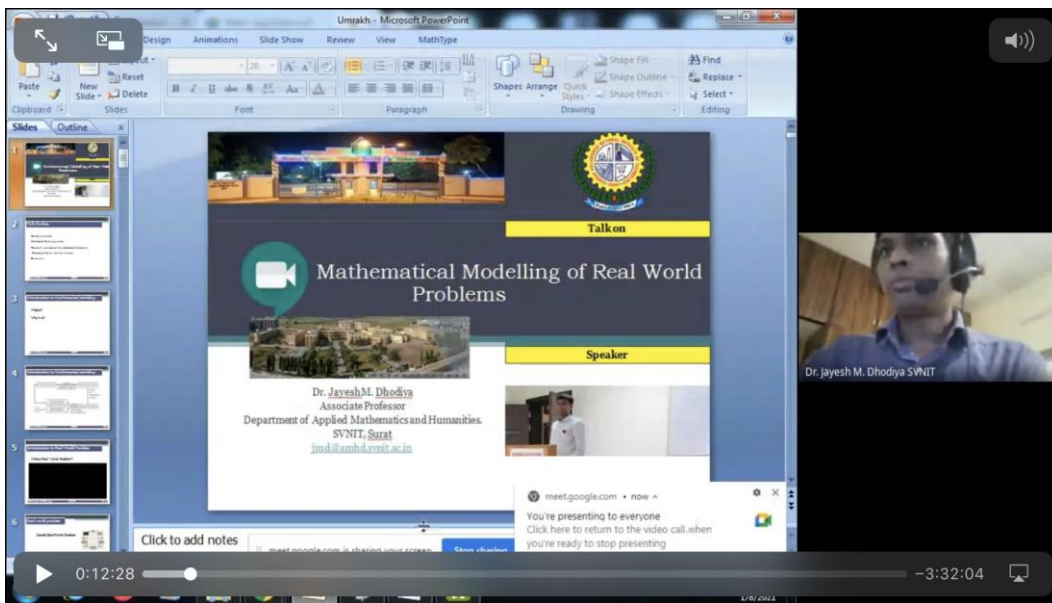


**APPLIED SCIENCE AND HUMANITIES DEPARTMENT**

**EXPERT DELIVERY LECTURES**

**DAY 1**

**LECTURE SESSION-1**



**Dr. Jayesh M. Dhodiya**  
Delivering expert speech on  
“Mathematical Modelling on Real World Problems”



**APPLIED SCIENCE AND HUMANITIES DEPARTMENT**

**DAY 1**

**LECTURE SESSION-2**

MATHEMATICAL MODELLING  
USING  
ORDINARY DIFFERENTIAL  
EQUATIONS

Kaushal Patel  
Department of Mathematics  
Veer Narmad South Gujarat University, Surat  
kpatel@vnsu.ac.in

meet.google.com is sharing your screen. Stop sharing Hide

Workspace

| Name | Value           |
|------|-----------------|
| ans  | double          |
| ODE  | ODE('M1')/ODE2' |
| t    | double          |
| ns   | double          |

```
Error in ode45 (line 111)
    outputs = feval(odefun,solver_name,ode,tspan,y0,options,varargin);
>> [t,ns] = ode45(f,[0 10],[0.9 0.1 0]);
>> plot(t,ns)
>> hold on
>> [t,ns] = ode45(f,[0 10],[0.9 0.1 0]);
>> plot(t,ns)
```

**Dr. Kaushal B. Patel**

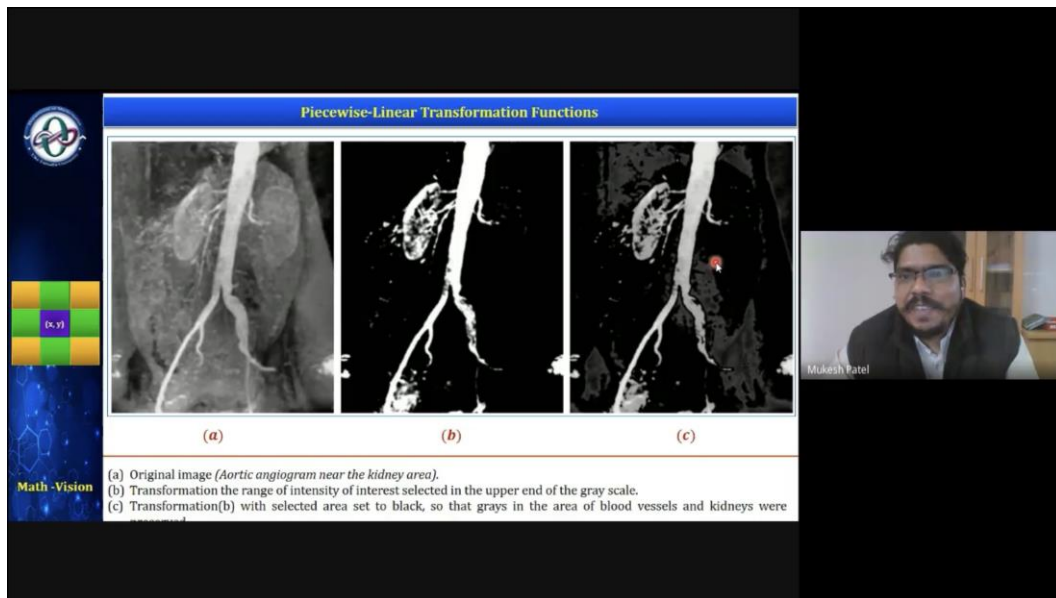
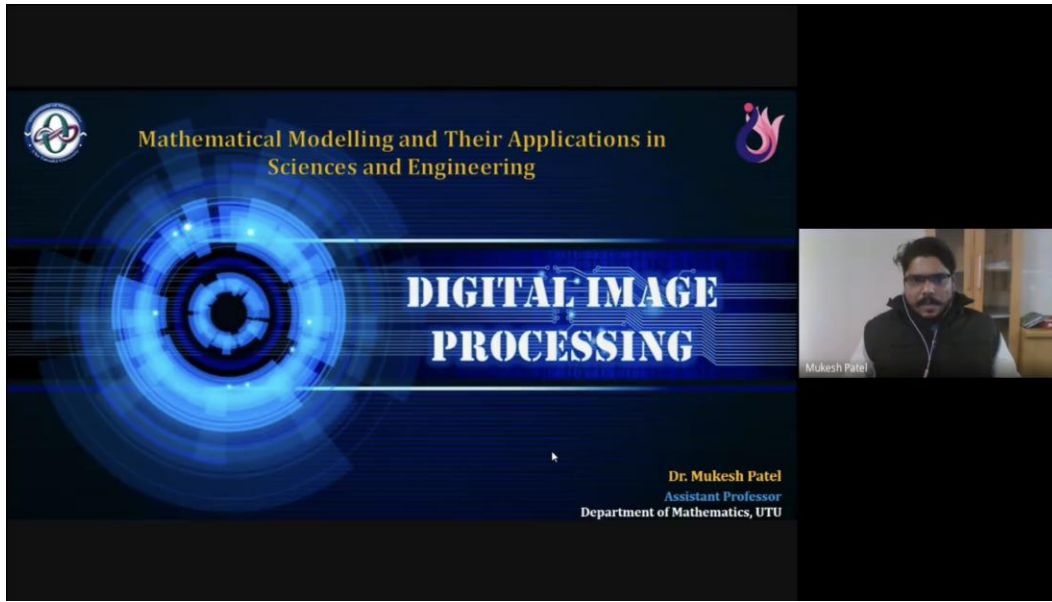
Delivering expert speech on  
“Mathematical Modelling on ODE”



**APPLIED SCIENCE AND HUMANITIES DEPARTMENT**

**DAY 1**

**LECTURE SESSION-3**



**Dr. Mukesh T. Patel**  
Delivering expert speech on  
“Digital Image Processing”



**APPLIED SCIENCE AND HUMANITIES DEPARTMENT**

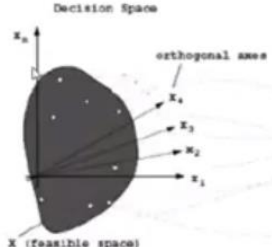
**DAY 2**

**LECTURE SESSION-4**

### Single objective and Multi objective Optimization

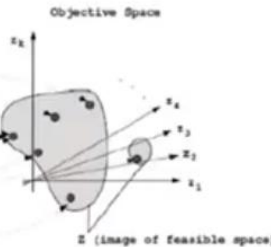
1. The space in which the objective vector belongs is called the Objective Space.
2. The image of the feasible set under  $S$  is called the Decision Space.

Decision Space



X (feasible space)


Objective Space



Z (image of feasible space)

orthogonal axes

Dr.Jayesh .M.Dhodiya
SVNIT
Surat

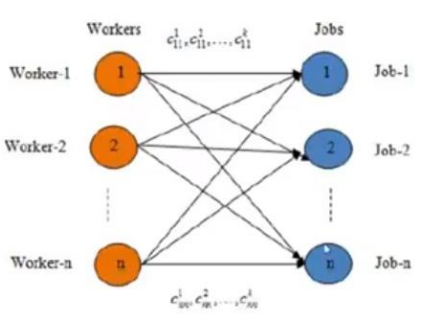


Dr. Jayesh M. Dhodiya SVNIT

### Application of Multi objective Optimization

**Assignment problem**

Workers




Workers:  $c_{11}^1, c_{12}^1, \dots, c_{1n}^1$

Jobs: Job-1, Job-2, ..., Job-n

Workers: Worker-1, Worker-2, ..., Worker-n

Workers:  $c_{1n}^1, c_{2n}^2, \dots, c_{nn}^n$



Dr. Jayesh M. Dhodiya SVNIT

Dr.Jayesh .M.Dhodiya
SVNIT
Surat

**Dr. Jayesh M. Dhodiya**  
 Delivering expert speech on  
 “Mathematical Modelling on Multiobjective Optimization”




**APPLIED SCIENCE AND HUMANITIES DEPARTMENT**

**DAY 2**

**LECTURE SESSION-5**

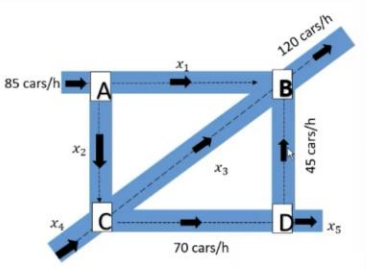
Concepts and Applications of Linear Algebra

Kaushal Patel  
Department of Mathematics  
Veer Narmad South Gujarat University, Surat  
kbpatel@vnsgu.ac.in




Traffic flow

- Observation
  - Flow into an intersection = flow out of that intersection
  - Total flow in = total flow out



Problem:  
Find the flow rate of cars on each segment of streets



**Dr. Kaushal B. Patel**

Delivering expert speech on  
“Mathematical Modelling on Linear Algebra”





**APPLIED SCIENCE AND HUMANITIES DEPARTMENT**

**DAY 2**

**LECTURE SESSION-6**

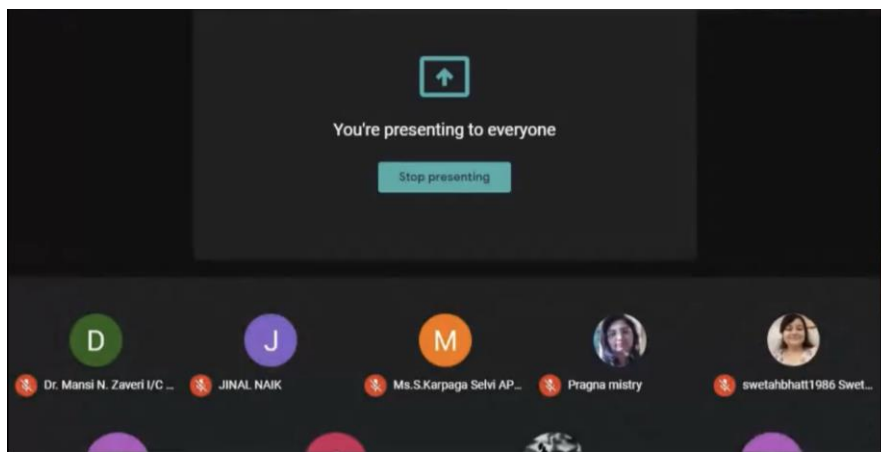
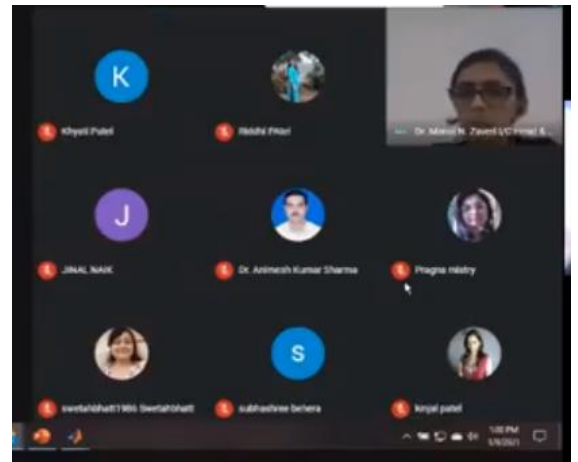
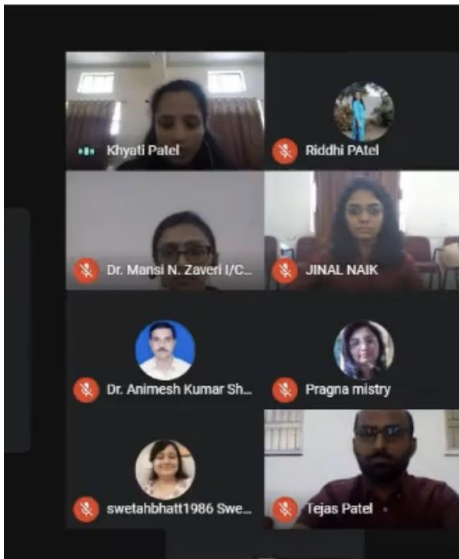
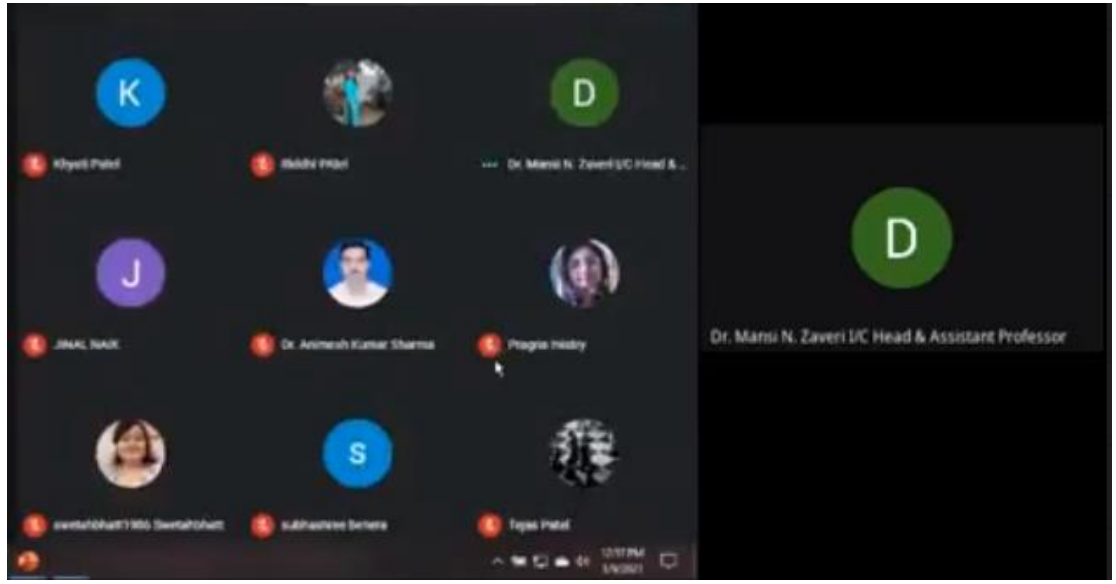


**Dr. Mukesh T. Patel**  
Delivering expert speech on  
“Mathematical Modelling on PDE”



**APPLIED SCIENCE AND HUMANITIES DEPARTMENT**

**AUDIENCES**





**APPLIED SCIENCE AND HUMANITIES DEPARTMENT**

**PRESS RELEASE**

બારડોલીની એસ એન પટેલ ઇન્સ્ટિટ્યૂટ ઓફ ટેકનોલોજી એન્ડ રિસર્ચ સેન્ટર, ઉમરાખના એપ્લાઇડ સાયન્સ એન્ડ હ્યુમેનીટીઝ વિભાગ દ્વારા ગુજકોસ્ટ પ્રાયોજિત બે દિવસના ઓનલાઇન વર્કશોપનું આયોજન

બારડોલી | વિદ્યાભરતી ટ્રસ્ટ હેઠળ કાર્યરત સીતારામભાઈ નારણજી પટેલ ઇન્સ્ટિટ્યૂટ ઓફ ટેકનોલોજી એન્ડ રિસર્ચ સેન્ટર, ઉમરાખના એપ્લાઇડ સાયન્સ એન્ડ હ્યુમેનીટીઝ વિભાગ દ્વારા તા. ૮ અને ૯ જાન્યુઆરી, ૨૦૨૧ ના રોજ ઓનલાઇન વર્કશોપનું આયોજન કરવામાં આવ્યું છે. આ વર્કશોપ GUJARAT COUNCIL OF SCIENCE & TECHNOLOGY (GUJCOST) દ્વારા પ્રાયોજિત છે.

વર્કશોપનો વિષય “Mathematical Modelling & Their Applications in Sciences and Engineering” છે. ગુજરાતની પ્રતિષ્ઠિત સંસ્થામાંથી મેથેમેટિક્સ શાખાના પ્રોફેસરો ઉપસ્થિત રહી અન્ય પ્રોફેસરો તેમજ વિદ્યાર્થીઓને માર્ગદર્શન આપશે. આ વર્કશોપમાં ગુજરાતમાંથી વિવિધ વિજ્ઞાન શાખાઓ તથા ઈજનેરી શાખાના ફેકલ્ટીઓ તેમજ વિદ્યાર્થીઓ ભાગ લઈ શકશે.



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### ACKNOWLEDGEMENT

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