Independent Study Period

Course Catalogue 2019

Contents

Course Title: Biomimicry: Nature integrated thinking and living.

Course Fee: **Rs. 6000**

Abstract: The Biomimicry workshop will provide an introduction a new discipline that looks at nature as a source of ideas and solutions to help solve human challenges. Each day during the course you will get to see and learn something new about the amazing patterns, designs and solutions in nature. You will also get to play learning games and go outside to field trips to explore nature. You will learn about the latest biomimicry tools and methodology that you apply as a group project to develop a nature inspired innovation/solution to a human challenge.

Methodology: Lectures and presentations Field trips & outdoor exercises to observe and identify patterns in nature In class student presentations (peer learning) Multidisciplinary explorations (building bridges with biology) Individual as well as group based assignments (short design explorations and one long design project) Learning games, exercises, movie and activities. Library/ web research & readings Introduction to using biological data bases

Academic Concept: The course aims to inform and equip participants in the following way: Understand and be able to apply the Biomimicry approach in order to solve problems/innovate in especially in the fields of design, engineering and business. Understand the concepts of natures deep patterns/lifes overarching principles & how these can inform the design of better and sustainable solutions Understand how to explore and learn from nature at various levels of product, process and systems. Learn and understand methods and tools to help in applying the Biomimicry approach in the problem solving/innovation process: especially in the fields of Design Engineering and Business. Reconnect with nature: learning to observe and take inspiration from nature (not about nature but from nature. Observe and understand nature by function.) The students will have regular assignments (both individual and group) to facilitate as also assess their learning. Overall each student (as individual and as part of a group) will work on various short learning exercises and games and in parallel work on one long group project: Design challenge - Integrating Biology in Design

Learning Outcome: The course aims to inform participants about the following theoretical concept areas: Operating conditions of planet earth (theory) Lifes unifying patterns(theory) Integrating Biology into Design (theory, tools and methodology)

Tangible Outcome: Design explorations (in various media): the group projects of the participants Design challenge - Integrating Biology in Design. (Poster/ Presentation/Physical model/models of explorations of biology (looking at nature functionally). or One two minute (max 5 minute) video/animation to summarize & explain the project

Instructor - 1

Instructor Name: Prashant Dhawan

Brief Profile: Prashant Dhawan is the Co-founder of the Biomimicry India Network. He holds a degree in MS (Master of Science) in Biomimicry from the Arizona State University, U.S.A and Biomimicry Professional Certification from Biomimicry 3.8, USA. He also holds a degree in Architecture from SPA Delhi, and an MBA from ISB Hyderabad. Prashant prefers to call himself an amateur researcher of issues related to sustainable happiness.

Course Title: Aravalis: The Future of Gujarat

Course Fee: **Rs. 16000 (Includes 7 days travel)**

Abstract: Step foot upon arguably the most ancient mountain range in the world and come face to face with its ancient communities. Examine the interface of the landscape and culture, development and evolution, and the self and the world. Trek, camp, reflect, engage. Stretching from Delhi in the northeast across Rajasthan until it fans out and dissipates in Northern Gujarat, the Aravali Range has played a critical role in local geographical development, remarkably blocking the great Afro-Asian desert from entering the heartland of India, and continues to play a crucial role in the healthy economy and ecology of bordering states. How a mountain range can form history, economics, culture, and development can only be understood by experience and exploration. Thus, the students will explore the Aravalis, deep into tribal lands, by camping and trekking to engage in historical perspectives on culture, geography & anthropology which lend insights into natural design, human development, modern development & designs of harmony. Students that choose this course should be ready to step out of their comfort zones!

Methodology: Students are engaged in the experience of trekking in the forest and simple living in a village. A main aspect of our pedagogy is to engage the students in a space and activities away from the city and their normal lives with careful facilitation, lectures, and reflection so students can learn actually to observe the world in depth. Discussion and reflection are key methods used to analyze experience.

Academic Concept: The academic learning in this course revolves around linking the abstract idea of climate change to the living realities of the Aravalis and Gujarat, explaining the facts, figures and concepts. In this course students will learn about geology and hydrology as well as the scientific role of the mountains and forests in the regional watershed. As an interdisciplinary course, students will also examine and experience how culture and lifestyle affect the relationship of human society with the environment and in turn affect the human psyche. Through this interdisciplinary approach, students learn to view their area of study in a larger context and to consider its professional potential as well as the role of the professional.

Learning Outcome: 1. Importance of the Natural Heritage of Southern Aravalis in Context of Regional Climate Control 2. Wider Perspective on Faculties of Study: A basic understanding of the implications of professional work on the society, environment and climate at large 3. Understanding of the Role of the Village in India for the Sustenance of Ecology and Economy

Tangible Outcome: Model of Hydrological Concept; Either game or magazine elaborating learning outcomes

Instructor - 1

Instructor Name: Mihir Bhardwaj
Brief Profile: Mihir has widespread experience in fields such as education, wildlife, adventure sports, youth programming, professional training, cultural exchange and outdoor adventure cum sensitization activities for groups of all sizes and backgrounds. He has over 20 years of experience working with tribal communities. Currently, Mihir is working with a variety of village communities towards sustainable solutions on the local level. He is focused on working with tribal youth to prevent migration by building a strong local economy under community leadership.

Instructor - 2
Instructor Name: Mackenzie Shreve
Brief Profile: Mackenzie completed her BA in Theology with a minor in Leadership at Loyola University Chicago after which she traveled to India to better understand social justice in relation to the global agriculture industry. After settling in India she has continued to build her understanding of local culture, food systems, and government to support sustainable agricultural practices and marketing that supports small farmers. Mackenzie also teaches Hindi and facilitates foreign volunteers.

Course Title: The Politics of Food

Course Fee: **Rs. 6000**

Abstract: Eat at McDonalds or local Vada pau center? Organic or conventional? Restaurants or home cooked? Vegetarian or Non-Vegetarian? Food is something none of us can live without. Food and eating helps define who we are and our relationships and with other people and places. Where does our food come from? Where do we eat it? How does food and eating shape our social relationships and our understandings of environment and place? These questions are fundamentally social, cultural, economic and geographic in nature. Exploring how food is grown and consumed leads to a deeper understanding of societies and environments and their complex relationships. Do we think about sustainability when we make food choices? This course will provide students with an overview of our worlds food system and its many linkages from farm to fork. They will gain further appreciation of the complex implications of ones choices, and will be challenged to think critically about how dietary choices are linked to social, political and environmental impacts. Students will define what truly sustainable dietary choices are for them.

Methodology: Each thematic course will be taught through classroom Socratic discussions, movie screening, case study analysis, role-play, debates and other such activities; it will include hands-on experiential learning, research and a field trip. These activities will allow students to directly observe the concepts studied in the classroom and analyze issues surrounding Indian and global food culture from varied approaches and perspectives. The course will help students dig deeper and question issues that seem obvious to understand. They will be encouraged to question the structure, rules and practices of the food industry. The courses aim is that each student develop food-systems intelligence: learns to be skeptical in a skillful way, learning to assess if a claim or label is true and complete, understanding the motivations of each actor in the food system. It gives the students the opportunity to reflect and understand their personal values and explore how these values can guide choices and actions to become conscious eaters/consumers. Once students can define their values as they relate to the food system, the program will help them to develop a personal plan of action for participation in the food movement.

Academic Concept: The program curricular will apply an interdisciplinary approach to the study the issues of food and sustainability. It will reveal the links between agroecology, agronomy, anthropology, biology, business, economics, nutrition, philosophy, policy, sociology, technology to discover how the individual, the community, and society relate to food in India, and around the world.

Learning Outcome: 1. Students understand more about where your food comes from and a range of political, economic, social and cultural dimensions of food production, distribution, and consumption from the local to global scales 2. Students understand more about how food carries intrinsic meanings beyond nutrition 3. Students understand the social meanings

and the structural relations of power regarding the production, distribution, preparation and consumption of food. 4. Students develop a sociological understanding of the structure of a globalized, industrialized agriculture and food system and the impacts on farmers, consumers and communities. 5. Students understand the organization of a global food system that links the production and consumption of food; particularly how it generates abundance for some and famine for others. 6. Students acquire understanding alternative narratives to the current responses to social problems regarding food and agriculture. 7. To work with their hands, tend a garden and grow their own vegetables

Tangible Outcome: 5. Community Vegetable Garden. The students will develop a community vegetable garden as an integral part of the program. The garden will foster and build bridges between the university and larger community. It will help to create a space where students can participate in planting, growing, and harvesting food. The Garden will: Create an edible garden for all to enjoy Create connection between students and the land. Educate and expand knowledge about: Teach them sustainable vegetable, herbs growing A variety of cultural foods and flowers Gardening processes Natural environments and organic practices Community building To share food and ideas To preserve land, culture, and tradition

Instructor - 1

Instructor Name: Purvi Vyas

Brief Profile: Ms. Purvi Vyas (An Organic Farmer, Food Politics Professor and Environment Consultant) An Organic Farmer, I have a master's in Environmental Management from the University of Western Sydney. I am associated with various NGOs working on sustainable development and live on my organic farm in Matar, 45 kilometres from Ahmedabad, which is 70-80% self-sustainable. I teach everything about food â€“ the Food system, the politics behind food choices defined by the market and impact of these choices on the environment at universities such as PDPU â€“ Gandhinagar, NID and Swaraj University in Udaipur. Currently, I am working towards transforming more than five to six villages with over 2,000 farmers to sustainable farming models. These farmers are connected to the consumers directly through food melas, festivals, conferences and workshops organized with partner NGOs and Organizations.

Course Title: Ocean Explorers

Course Fee: **Rs. 12000 (Includes 3 days travel)**

Abstract: Our planet Earth is 70% water and 30% land. In fact, instead of planet Earth,, it should rather be called planet Water . Of the 70% water cover on the Earth, more than 90% is actually marine water or salt water in oceans. Seas forming a complex web of ecosystems holistically known as Marine Ecosystems. There is more life in these ecosystems than anywhere on the land, and a lot of it is unique, unexplored and unknown. The oceans are a significant source of oxygen for our planet and are instrumental in the storage of carbon dioxide. They are not only home to the animals but also innumerable plant species. This course is designed to give a glimpse of these exclusive and exceptional ecosystems and how they are important for the survival of mankind.

Methodology: One of the most important method of learning in this course is experiential learning and hands on learning in the form of a field visit to the coastal area where students can explore, discover and learn. The other method that will be employed is usage of hands on activities, informative movies and documentaries and group discussion. The students will learn the basics of GIS through GIS application like Quantum GIS with hands on.

Academic Concept: Introduce Students to the principal coastal and oceanic ecosystems. In each ecosystem, students will explore how environmental variables affect biological communities and ecological interactions. Introduce topical research issues on biodiversity, global climate change, and the evolution of life in the oceans. Introduce GIS mapping.

Learning Outcome: Generate awareness, interest and passion for the conservation of oceans and seas among youth. Study human impact including urban habitations, industrial growth, ports and urban livelihood activities on coastal ecosystems. Gain an understanding of the local and global context of coastal/marine issues, the differences and similarities in cross country approaches for addressing these issues. Encourage and develop skills among students in research, documentation and monitoring of marine biodiversity. Basic understanding of map preparation using GIS mapping system.

Tangible Outcome: GIS based Maps Short Documentary on different aspects of marine ecosystems Algal cards for preservation and identification of marine algae Photographic posters with key messages of conservation

Instructor - 1

Instructor Name: Shefali Trushit Naik

Brief Profile: Shefali Naik is an Assistant Professor at School of Engineering and Applied Sciences, Ahmedabad University. She is an author of the book Concepts of Database Management System.

She has presented and published papers in national and international conferences and journals. She has a deep interest in Wildlife and Bird Watching.

Instructor - 2

Instructor Name: Janki Teli

Brief Profile: Janki Teli is a naturalist working in the field of wildlife research, conservation and education for last 15 years. She has passion for interacting with students and spreading the message of nature conservation.

Course Title: Cyber Security

Course Fee: **Rs. 6000**

Abstract: Use of the Internet becomes more central in our daily life. Cyber-attacks are easier due to high Internet penetration and poor awareness about Cyber Security. Recent Cyber awareness survey indicates that many users of digital devices are little aware about fundamentals of Cyber security. Hence, data stored on digital devices are more susceptible to cyber-attacks. This course helps students to understand fundamentals of Cyber security and makes their surfing and digital transactions safe over the Internet.

Methodology: The course will achieve required learning outcomes through Activity based learning Classroom discussion and demonstration of security tools Case study/scenario based learning Project based learning and Laboratory practices

Academic Concept: Students will learn following academic concepts during the course:- Fundamentals of Cyber Security; Aspects of Information security over Internet; Cyber-attacks and its prevention mechanisms; Aspects of safe financial transactions over Internet; E-commerce Security; Security Management Practices; Digital Forensics and Intellectual Property Rights in Cyberspace.

Learning Outcome: After completing this course student will have gained an awareness of key Cyber security principles. Upon completion of this course, student will be able to describe and classify various categories of Cyber attacks understand how malicious code (virus, ransomware, etc.) works apply prevention mechanisms to protect digital resources and personal data stored on devices perform safe financial transaction over Internet with greater security

Tangible Outcome: Students will be able to exhibit Posters with live demonstration during Expo related to following topics: E-mail forensics - detecting location of email sender Detecting fake websites Data Security using Cryptography Image forensics (detecting forged images) Steganography (Hiding data into image) Students will be able to exhibit Posters related to: Cyber-attacks and its prevention mechanisms Safe financial transactions over Internet Securing personal data on digital devices E-commerce Security Computer / Mobile Forensics

Instructor - 1

Instructor Name: Kuntal Patel

Brief Profile: Dr. Kuntal Patel is currently working as an Assistant Professor at School of Engineering and Applied Science, Ahmedabad University. He is a certified Cyber Security Professional. He has published more than 25 research papers at peer-reviewed Journals and Conferences. He is actively involved in Google, ACM-India and Govt. of Gujarat supported Activity Based Learning Project called CS-Pathshala. He is an editorial board member of Computer Science textbook of Gujarat State Education Board and contributes to GSEBs 10th standard CS textbook content and reviews those of 9th, 10th, 11th and 12th standards. He is also a member of Computer Science editorial team of National Institute of Open Schooling, Regional Center

Gandhinagar. He is the Professional member of Association for Computing Machinery (ACM) and life time member of CSI and ISTE. His current areas of interest include Cyber Security, Programming Foundations, Computer Network, Google Analytics and Google Apps for enhancing teaching and learning processes.

Course Title: Augmented Reality and Virtual Reality

Course Fee: **Rs. 10000 (Includes certificate)**

Abstract: The emergence of Virtual Reality (VR) and Augmented Reality (AR) is taking technology through unexplored avenues. Entertainment, medicine and many other industries use and benefit from these technologies. This introductory course would help the students understand the world of ARVR technologies in details. During this course the students would be taught about various technologies invovled in ARVR like Unity3d, GoogleVR

Outline : The entire course is designed in a structured way inorder to help the students absorb the entire technology in the best possible way for maximising their retention capability. Students would be taught about the technologies right from the basics and as the days progresses the advanced technologies would be taught. Students would have hands on experience in coding their way into the world of ARVR.

Methodology: The Industry experts would train the students about various prospects of writing a good code. Since the experts would have a one to one interaction with the students during the internship all the problems

Academic Concept: Day 1 Brief introduction to VR and it's origin Introduction to AR and it's origin Applications and industries using AR Difference between AR and VR Applications of AR and VR Day 2 Introduction to Unity3D and its origin Installation of the required software - Unity3D Brief introduction to Unityâ€™s interface Navigating in 3D space Explanation of 3D objects Day 3 Introduction to 3d pipeline Folder structure (Assets, Prefabs, Materials, etc.) Unity scenes Brief introduction to the Asset Store Day 4 Introduction to different AR SDKs Creating and deploying a simple Vuforia AR application to the Android platform Day 5 Build a Happy birthday app for your friend in AR Setting up Android SDK Building the app for Android Day 6 Introduction to Spark AR and building filters for Instagram and Facebook VR fundamentals VR concepts like FOV, Rendering and UI Day 7 Creating a VR project in Unity Setting up Google cardboard SDK Components of Google VR Introduction to coding in C# Day 8 Adding assets and deep dive into Unity concepts like Prefabs, Nested Prefabs, Materials, Shaders Animations Day 9 Sounds and Audio Source Writing C# code to make various components to work together Day 10 Menu and credits using Unity UI Building the VR app for Android and deploying it to a real Android device.

Learning Outcome: Students would be able to build a AR/VR app right from scratch. Students get an exposure to the industries working in ARVR field and also would be enlightened about the job prospects.

Tangible Outcome: ARVR app could be made by students which would be showcased during the final day.

Instructor - 1

Instructor Name: Amiet Chaudhry

Brief Profile: Ezenith Education provides professional academic training in the form of workshops/internships/training programs to engineering students from Mechanical Engineering, Automobile Engineering, Electronics Engineering, E&Tc Engineering and Computer Engineering.

Course Title: Drone Development

Course Fee: **Rs. 10000 (Includes certificate)**

Abstract: From 1st December 2018 it is legal to purchase drones and fly it upto a particular altitude. Drone Industry is the second fastest growing industry in the world with Indian Import industry accounting for 10 billion Dollars. Having a basic understanding about how drones work and how they fly would help the students as a drone pilot. During this Course the students would get a hands on approach towards building of a drone and Remoter controlled aircraft.

Methodology: This internship would help the students to have a clear understanding about how the drones are built and also about their maintenance part. Every sub system of a drone would be explained to the students in details right from the basics inorder for a better understanding. The students would be building an Quadcopter and RC Aircraft during this tenture

Academic Concept: The training sessions would be a right combination of theory and practicals ie every topics taught to the students would have certain practical sessions or live demonstration for better visualization. Theory sessions includes clear and crisp AVs. Students would also be given an opportunity to work on Industry Projects

Learning Outcome: On the completion of the internship the students would be in a situation where they can build and fly the drones. They would also be in a situation to design various drones depending upon the application

Tangible Outcome: Students would be building and operating an fully functional Quadcopter and RC Aircraft

Instructor - 1

Instructor Name: Ezenith Education

Brief Profile: Ezenith Education provides professional academic training in the form of workshops/internships/training programs to engineering students from Mechanical Engineering, Automobile Engineering, Electronics Engineering, E&Tc Engineering and Computer Engineering.

Course Title: Make an impactful short film

Course Fee: **Rs. 6000**

Abstract: The course work will introduce students to basic film-making process. The three major building blocks of films- Pre-Production, Production and Post-Production will be taught. It will teach them to write conceptual and executable scripts and screenplays. The logic and techniques to write a gripping and engaging short film will be taught. It will also be an introduction to the following but not limited to film-production, shoot scheduling, shot divisions, art direction, light arrangement and sound recording, film budgeting and film distribution. The basic cameras, light equipment and sound recorders will be demonstrated. The set design and art direction basics will be taught. It will teach them to do basic film editing. The entire course-work will be a Learning by Doing exercise of each stages of film-making.

Methodology: The pedagogical model will include a cascading waterfall model of teaching. Each stage of the process will sequentially act as a pre-cursor to the next stage in coercion creating a successful short film as an output.

Academic Concept: Students will learn how to visualize ideas, conceptualize and represent through the medium of films. Students will learn the film-making process and the art of executable team-building process Students will learn how to work in teams with variegated skill-sets and how to do flow of information from one department to another Students will learn how to creatively write their ideas in the form of stories

Learning Outcome: They will learn to conceptualize and represent their ideas in a better way using visual communication techniques They will learn to write for screen and films They will learn to convert presentations into films or video.

Tangible Outcome: A short film will be made as a tangible outcome at the end of 12 days program. Students will be divided into groups and each group will be making a short film which will be made ready for screening.

Instructor - 1

Instructor Name: Tanmay Shah

Brief Profile: Tanmay, Founder & CEO at FridayFictionFilms is a former Research Associate at IIT-Bombay. He holds a Limca Book Of Record, India Book Of Record, Asia Book Of Record and Golden Book Of World Record for making 52 short films in 52 weeks in 2015. His short documentary-Pinch Of Salt has won 15 international film festival awards and is screened at more than 10 countries. His latest documentary on the - 'History Of Ganga' is taking rounds in film festivals. FridayFictionFilms, his film production house has served more than 80 clients under his direction.

Course Title: Design Thinking Designing Thinking

Course Fee: **Rs. 6000**

Abstract: This course is aimed at enabling students to be their own version of a design thinker in any and all walks of life. Design is about creating conditions for beneficial change to happen on its own. Design Thinking is about creating conditions for Design to happen on its own. Since thought comes from within, this course aims to equip students to look inside themselves, refine themselves and then look at the world through a new vision...a vision of creativity, empathy, optimism and such attributes. This is not a self-help course. It is a scientific design thinking course mixing many different streams of knowledge to create a holistic understanding of the world.

Methodology: The course content will be based on a daily mix of theory, on-the-spot assignments and homework.

Academic Concept: Starting from eliminating misconceptions about what a designer is, what design is, the course will lead students to a better understanding about human beings and the world through a scientific perspective. Students will be trained in methods of observation, creativity as also techniques which improve their bodies and brains to become sharper in all aspects of life. Students will also address what are called as 'mental blocks', which inhibit them from performing to their peak efficiency despite their training. They will be trained in empathy. And finally, they will learn how to explore intuition deeply, and gain voluntary control on switching between small-scale and large-scale thinking, otherwise known as local and global processing.

Learning Outcome: - Enhanced observation skills - Better representation and communication skills - Elimination of mental blocks towards creative activities - Increased empathy - Scientific understanding of human beings and the world

Tangible Outcome: The outcome of the course will be models, prototypes, charts or may be partially functional products.

Instructor - 1

Instructor Name: Aditya Bharadwaj

Brief Profile: Aditya Bharadwaj is a mechanical engineer and a product designer. He has more than 10 years of experience in the industry, through a variety of projects and research. He is deeply interested in the science behind all phenomena, rather than believe in perceptions. He brings a mix of different streams of design, physics, chemistry, biology, economics, cryptography, human behaviour, the brain and even ancient Vedic texts.

Course Title: Living the Wildlife

Course Fee: **Rs. 8000 (Includes several day trips)**

Abstract: The existence of wildlife in the urban settings is not a new phenomenon. In fact, records of wildlife-urban interaction have been found since the time human beings began to settle down and stopped living the historical nomadic lifestyle. Despite wildlife always existing in cities and in near vicinity to humans, the study of these interactions is relatively new in the field of science. With the massively increased rates of urban sprawl that society has seen in the past century, the need for an extensive understanding of the relationships between humans and animals has increased, and this is the underling motivation of offering a course in urban ecology.

Therefore, the objective of this course 'Living the Wildlife' is to understand human-wildlife interactions and learning to coexist in an urban environment. Course delivery is based on combination of field activities such as visiting urban ecological niches to observe crocodiles and pythons, and visiting wildlife rescue centres, and classroom activities such as discussing existing theories about compassion education and participatory conservation efforts. This course addresses the fundamental need of the hour, that of educating and sensitizing youth to the tenets of cohabitation and conservation needed in times of ecological crises.

Methodology: This course is a combination of field work and classroom engagement. Field work will include visiting wildlife rescue centres (Forest Department rescue and rehab centre and Jivdaya Charitable Trust), observing ecological niches (Kheda, Thol, Kanjari, and Mehsana) and a visit to an urban petting zoo which includes over 150 animals for compassion education. Classroom activity will include analyzing field-work data, theorizing urban wildlife ecology, designing a coffee-table picture book, and creating an information handout about urban wildlife.

Academic Concept: Participants will study about urban ecologies and wildlife. They will learn about the impact of human-wildlife interactions, and the internalize the pressing need to conserve wildlife in urban areas. Participants will also learn different survey methods pertaining to habitat assessments, species inventories, and ecological research. They will also be equipped to use basic data analysis, survey equipment such as GPS and GIS software, and collate and analyze data gathered through field work. Additionally, participants will put to practice certain fundamentals of communication such as technical writing to produce materials on creating awareness.

Learning Outcome: 1. Participants will contribute to conservation science, which is an interdisciplinary approach to protection of biodiversity.

2. Participants will engage in real-time rescue of urban wildlife and learn some basic first-aid measures for conservation and subsequent rehabilitation.

3. Participants will be able to use survey method for scientific data collection.

4. Participants will learn ways of educating/informing the urban population about co-existing urban wildlife by creating information sheets and a coffee-table book.

Tangible Outcome: Participants will design and publish a three-part coffee-table picture book - identification of urban wildlife, co-existence of humans and animals, and compassion expressions. They will also create a information handouts containing important information on how to respond to urban wildlife. This will be accessible with a QR code and made publicly available through the virtual platforms.

Instructor - 1

Instructor Name: Soham Mukherjee

Brief Profile: Herpetologist and wildlife biologist, specializing in ecological research and animal behaviors. Currently working on human-crocodile conflict, snakebite mitigation, and wildlife roadkill mitigation in Gujarat, herpetofaunal assessments in Western Ghats and Arunachal Pradesh. Previously worked as a wildlife rehabilitator for many years, before working as a curator at Centre for Herpetology / Madras Crocodile Bank, and later as a wildlife specialist with Humane Society International in projects spread across nine countries. Recently featured in Animal Planets documentary series Snake Squad.

Instructor - 2

Instructor Name: Tana Trivedi

Brief Profile: Tana Trivedi is a faculty member of the Amrut Mody School of Management, Ahmedabad University. She has over a decade of experience in teaching Communication and Literature in Ahmedabad and Bangalore. Her interests are Literature and Ecology, and Wildlife Protection and Conservation.

Course Title: Digital Fabrication with 3D Printing

Course Fee: **Rs. 9000 (Includes certificate)**

Abstract: Opening multiple avenues of exploration, 3D printing helps you realize all your ideas into tangible products. 3D printing -- also known as additive manufacturing -- turns digital 3D models into solid objects by building them up in layers. It is one of the most amazing rapid prototyping techniques ever. 3D printing has so many multi-disciplinary applications in the field of Education, Design, Architecture, Manufacturing etc. This course is meant for students, hobbyists, designers, engineers and every creative person who haven't explored 3D printing yet.

Methodology: The course will follow a complete hands-on approach wherein students will be learning to take their ideas from a mere thought to digital design and then a physical prototype. The students will be learning design software to bring alive their ideas and how-to-use a 3D printer to print them in 3D. During the course, we will have multiple team-based projects enabling peer to peer learning and collaboration. The problem solving shall be enabled through a design -thinking process to help them innovate.

Academic Concept: At the end of this module, students will be able to: -Understand the 3d printing technology - Concept of Motors, mechanics of machine -Understand the working and construction of 3D printing machine & 3D Pen - Electronic circuit, product manufacturing , detailing - Learn about applications of 3D printing -Learn and independently use 3D design software to make 3d models of their ideas - Design basics, units of measurement, scaling etc. - Real-world problem-solving skills, Team Work & Collaboration -Convert the 3d prototypes to product finish models through post-processing

Learning Outcome: At the end of this module, students will be able to: -Understand the 3d printing technology -Understand the working and construction of 3D printing machine & 3D Pen - Learn about applications of 3D printing -Learn and independently use 3D design software to make 3d models of their ideas -Real-world problem-solving skills, Team Work & Collaboration - Convert the 3d prototypes to product finish models through post-processing - 21st Century Skills of Teamwork, critical thinking and collaboration

Tangible Outcome: Students will be converting their ideas into physical prototypes that would range from name tags to architecture models, furniture replicas and functional prototypes. The same would be displayed at the expo.

Instructor – 1

Instructor Name: Prem Sagar

Brief Profile: Founder & CEO, Banaao - A Makers Playground Visiting Faculty, Pearl Academy B.E., Instrumentation & Control Engineering, NSIT (Delhi University) An Engineer by qualification, he is an avid geek and is always keen to solve problems by using hardware technologies. He is a full-time Maker & Manager and is the founder of Gurugrams first Makerspace, Banaao- A Makers

Playground, which is a multi-disciplinary innovation lab for people of all ages. His keen interest lies in democratizing the access to technology. Tinkering since childhood, he has made numerous prototypes & projects in the fields of electronics, mechanical, solar etc. and has conducted multiple national & international workshops.

Course Title: Scenes From The History of Science

Course Fee: **Rs. 6000**

Abstract: Some of the most popular ideas in the laypersons imagination of science come with a strong visual component. Whether its Archimedes jumping out of his bathtub crying Eureka! or the Apple falling on Newton's head, striking visuals help us understand and retain concepts. But are these incidents' of the falling apple or the streaking philosopher actually true? How does one determine whether an account that has been passed down over generations is historically accurate? How does one go about finding out more about how scientific ideas really came about? In Scenes from a History of Science we'll learn to think historically about science, and also about how to use the dynamic artform of comics to communicate scientific concepts in a simple manner. Please note that amazing drawing skills aren't essential to making great comics. Think of XKCD, the wildly successful webcomic, which riffs on romance, sarcasm, math, and language using only stick figures. Consider Italian photo comics, which use photographic images instead of drawings. With imagination and practice, anyone can learn how to tell a story clearly through pictures and words.

Methodology: A few introductory sessions on the basics of historical thinking and sketching, followed by a hands-on workshop where students will choose an episode or theme from the history of science, read up on the subject, and explain what they have understood through sequential art.

Academic Concept: Students will learn to think historically about science, how to conduct basic historical research, and how to communicate ideas through the medium of sequential art.

Learning Outcome: Think historically about science Conduct basic historical research Understand and communicate scientific concepts Basic figure drawing Basic perspective drawing Cartooning/exaggeration Make clear and effective sequential art.

Tangible Outcome: Each student will produce a 4-6 page comic for the final project.

Instructor - 1
Instructor Name: Aparajith Ramnath
Brief Profile: Aparajith Ramnath is Assistant Professor at Ahmedabad University, where he is part of the School of Arts and Sciences as well as the Amrut Mody School of Management. He is a historian of science, technology and business. His first book, The Birth of an Indian Profession (a history of engineers in pre-Independence India) was published in 2017 by Oxford University Press.

Instructor - 2
Instructor Name: Anupam Arunachalam
Brief Profile: Anupam Arunachalam is a writer, illustrator and cartoonist. He has worked with Tinkle Magazine, Amar Chitra Katha, Mint, Forbes Life, Kokaachi, Doctors without Borders, and

Johnson and Johnson. His latest book, Tooth and Nail, Fur and Scale a collection of illustrated short stories about fantastic creatures from Indian myth and legend was published in 2017 by Penguin Random House India.

Course Title: Machine Learning and Artificial Intelligence

Course Fee: **Rs. 10000 (Includes certificate)**

Abstract: The program will familiarise the student with the various technical advancements in Machine Learning and Artificial Intelligence. It will also help the students understand the mathematics behind algorithms and how you can modify them to suit your needs

Outline : A high-level overview of AI to learn how Machine Learning provides the foundation for AI, and how you can leverage cognitive services in your apps. Artificial Intelligence will define the next generation of software solutions. This computer science course provides an overview of AI, and explains how it can be used to build smart apps. It uses a mix of engaging lectures and hands-on activities to help you take your first steps in the exciting field of AI.

Methodology: Students would be given detailed explanation about various softwares that would be used for Machine learning and Artificial Intelligence code writing. The trainer would help the students learn the softwares right from the basics. Every day the students would be provided with assignments which would help them learn in a better way.

Academic Concept: Introduction to Machine learning, Artificial Neural Network, Deep Learning, Fuzzy Logic, Applications, These are the headline topics that the students would be taught on a day to day basics. In Depth Understanding about TensorFlow and NumPy would also help the students.

Learning Outcome: We curated this program for anyone who is interested in learning about machine learning and artificial intelligence (AI). Whether you're new to these two fields or looking to advance your knowledge, Ezenith Education has a course that can fit your learning goals. You can pick up skills in introductory with several relevant applications and tools like Python, Google Cloud Platform, and TensorFlow. You will learn about trending topics like text mining, natural language processing, deep learning, neural networks, clustering, and classification, any or all of which you can use to solve real-world problems.

Tangible Outcome: How to start building AI with no previous coding experience using Python How to merge AI with apps to learn as effectively as possible How to optimize your AI to reach its maximum potential in the real world

Instructor - 1

Instructor Name: Ezenith Education

Brief Profile: Ezenith Education is a pan india based Educational service provider for Engineering students. Our USP is the 100's of Industrial expert partnership that we have. Due to this partnership we can provide the students with an upto date learning experience. These industrial experts would teach the students with their experience of more than

Why are you teaching this course?: We believe in Empowering students through technical education and our MOTTO is to Educate|Enlighten|Empower. By providing this quality courses to students they would have a good understanding about the industry and can make a educated decision for career progression.

Course Title: Mastering Multimedia for Great Careers

Course Fee: **Rs. 6000**

Abstract: Welcome to the exiting world of multimedia! Videos, animation, audio podcasts and social media campaigns are the core of international communications. In this hands-on workshop, students will learn the fundamentals of writing and producing multimedia content—including podcasts, the fast-growing global communications format--using cell phones and free software. The class will work individually and in groups to present complex topics, such as climate change, clearly and concisely; convey information accurately; and tell stories to engage the general public. Students will feature their work on a course website and build a digital identity that will last beyond the class. The course does not assume any multimedia background. No matter what careers they plan to pursue, students will develop the skills and tools associated with masterly global communicators.

Outline : The course goals are to learn effective writing and production of multimedia; to develop understanding of audio and video production with cell phones and free software; and to use storytelling and interviewing to create content to engage young listeners and viewers. Students will complete several short projects including an animation video, an audio podcast and a video and will plan a social media campaign. Course topics will include exploring the world of multimedia; amplifying communication through a social media campaign; creating digital portfolio for a website; conducting conversational interviews;, developing an animation video; recording and producing an audio podcast; practicing voice techniques for recording; planning, shooting and producing a video; adding text to video with motion graphics.

Methodology: The course will focus on multimedia writing and production techniques against the backdrop of studying the latest trends in digital media-making.

Academic Concept: This course reading will include selected articles about communications and multimedia and the design of content for high school and college students.

Tangible Outcome: Students will develop the knowhow to create effective multimedia and a portfolio of digital content to demonstrate their skills for internships, jobs and future careers. They will have the option of featuring their digital profile and abilities on a website.

Instructor – 1

Instructor Name: Sheila Tefft

Brief Profile: Sheila Tefft is a 2019 Fulbright scholar at Ahmedabad University, an international multimedia journalist, and a member of the faculty at Emory University in Atlanta. Rajiv Chandra, Tefft's husband and a former television and newspaper journalist, will assist in teaching the course.

Why are you teaching this course?: To teach students writing and production of professional-level videos, animation, audio podcasts, and social media campaigns; to show them techniques to use cell phone technology and boost their communications skills for successful careers; to share with students the fun and excitement of the international world of multimedia.

Course Title: Birds Birds Birds!

Course Fee: **Rs. 15000 (Includes 5 day travel)**

Abstract: This course will have you become wildlife biologists (ornithologist) for 10 days. There are three main components:

1. ***Becoming a birder and bird-lover in 3 days flat:*** **Learn about birds, their ecology, habitats and behavior. This is also your preparation to become effective in the field. For instance: How do you identify birds with your eyes closed? What are the resources available to enrich your birding experience? What are the dynamics of bird flight? How do birds get their colors? Why do birds behave the way they do?**

2. ***Kutch as your laboratory:*** **A great deal of learning (especially about behavior, community dynamics, habitat associations) will happen in the field. We will have almost a daily field component. The highlight will be a 4 day trip to Kutch and other key bird areas of Gujarat**

3. ***Your contribution to ornithology:*** **This component will be designed to get you familiar with techniques and methods that ornithologists use to gain insights into bird ecology and conservation. You will publish data that will become a tool for citizen science.**

Outline : The course is a 10-day immersion in the basics of ornithology. It will attempt to give students an appreciation of birds, their habitats, behavior, their association with humans and their value to life as we know it. It will employ a learning-by-doing methodology as far as possible. We will start by tracing bird ancestry with a novel method and dive into morphology through a dissection demonstration. Students will have the opportunity to handle (voluntarily with appropriate safety measures in place) birds, getting an up-close understanding of morphology. They will learn about several adaptations and avian behavior through guided research, exercises and presentations. There will be presentations of citizen science and live demonstrations of field methods to prepare students for the field component of the course. On each day that we are not in the field the schedule will be as follows: Early morning birding, morning lecture/demonstrations, daytime guided research, activities and group presentations synthesis, and evening having groups present back to the whole class on the assigned topics. Students will be assigned a major project that covers topics like contextualizing conservation challenges, understanding and developing ecotourism models & calculating carbon footprints. We will spend two days preparing the students to undertake these major projects (done in cross-functional groups). The projects will necessitate students to make observations, conduct interviews, collect and analyze data, and synthesize arguments/conclusions for their chosen group-projects during the field component of the visit. The field component will attempt

to cover all major bird habitat-types of Gujarat and will be 4 days and nights. We are planning to visit scrub habitats around Ahmedabad, Polo Forest, a couple of different wetland types, Little Rann of Kutch, Coastal habitats of Khambhat and Velavadar grasslands (subject to all permissions coming through). This component will allow the students to learn the concepts of avian diversity, bird-habitat associations, conservation issues, conservation administration, ecoutourism, ecosystem services, and human impact on ecosystems. We will then have the concluding sessions for students to present their major projects and a synthesizing lecture that ties the course together and highlights opportunities for further engagement with the topic.

Methodology: This course will employ the use of a variety of teaching methods. We will have a few lectures and presentations, however, the bulk of the learning is through field observations, and doing independent (but guided) research that deepens the learning obtained in the field.

Learning Outcome: To help students

1) **Instill in themselves a sense of wonder**

2) **Appreciate and engage with birds going forward**

3) **Understand the basics of bird diversity, behavior, morphology, physiology etc.**

4) **Experience the diversity of bird habitats first hand**

5) **Understand concepts like ecosystem services, conservation issues, human impacts, ecotourism, etc.**

6) **Understand role of citizens in conservation & science and encourage their own participation**

Tangible Outcome: Coffee table book on birds, conservation issues, ecotourism, human impacts, ecosystem services etc.

Instructor - 1

Instructor Name: Punit Lalbhai

Brief Profile: Punit's fascination with birds started when he was 3. He has a bachelor's degree in conservation biology from University of California, Davis, and a Masters in Environmental Science from Yale University, both of which enabled him to study birds and bird communities across North America, Africa and India. Punit then went on to get an MBA from INSEAD, France, and

now works for Arvind Ltd on developing business models that function at the intersection of sustainability, material science, engineering and conservation.

Why are you teaching this course?: It is an exciting experiment that will lead to a lot of learning and fun.

Course Title: Scribal Culture in Practice and Theory

Course Fee: **Rs. 8000 (Includes specialized material)**

Abstract: What if you had to make your own pen before you sat down to write? Or, what if you had to find a block of stone before you could express your ideas? This course explores the intersection between the practice and theory of writing in premodern India. In this course, students will make their own traditional writing instruments while studying about language and culture. Students will engage in hands-on activities with traditional materials such as bamboo reeds, make their own ink, and try their hand at inscribing rock-faces. Students will also study the relationship between language and culture and learn about the methods of studying inscriptions and manuscripts in premodern India. By studying both perspectives, we will appreciate writing in a holistic manner: as something that requires not only mental labour but physical labour as well.

Outline : This course studies the intersection between the practice and theory of writing in premodern India. The course consists of: (1) Designing and making your own traditional bamboo pens, ink, paper, and stone inscriptions; and (2) The humanistic study of language and culture (the theory behind the practice). Before movable type-face and the printing press, ideas were expressed and shared on a variety of materials: cotton paper, palm leaf, and birchbark manuscripts; copper plates; rock faces; cannons; and stone tablets. In these cases, writing involved craftmanship in addition to simply expressing ideas. Today, we take for granted the ease in which we write using the computer, mobile, pen, and paper. Scribes needed to be skilled in making their own writing instruments and skilled in the compelling expression of ideas and imaginative use of words. This course introduces students to these dual responsibilities or the doubled skill-set that was required of scribes in premodern India and, indeed, across the premodern world. Outline: 1. Introducing Scribal Culture Topics Introduction to Course; Discussion about the theory and practice components of the course; Introducing the Materials 1; Hands on Practice Readings Salomon (1998), Scope and Significance of Epigraphy, pp. 1-3. Dominik Wujastyk (2012),Indian Manuscripts, pp. 1-25. Activities Discussion of readings for the course. Dissecting modern writing technology Introducing the materials 2. Studying Languages and the Materials Topics Studying language in premodern India Introducing the Materials 2 Hands on Practice Readings Richard Eaton (2018), â€˜The Persian Cosmopolis (900-1900) and the Sanskrit Cosmopolis (400-1400), pp. 63-83. Activities Introducing the materials Practice as group; getting started with materials 3. Professionalism and Practice Topics Differing Professions: Paper versus Stone; Hands on Practice Readings Muzaffar Alam and Sanjay Subrahmanyam (2011), Making of a Munshi, pp. 185-209. Sheldon Pollock (2013),PraÅ›asti and its Congeners, pp. 21-39. Activities Working with paper, stone, and bamboo 4. Methods, History, and Critique Topics Methods in the Study of Manuscripts, Inscriptions, and Language Hands on Practice Readings AK Bhattacharyya (1982), Dedicatory Inscriptions from West Bengal, Preface, xii-xiii. G. Buhler

(1871), A Catalogue of Sanskrit Manuscripts contained in the private libraries of Gujarat, Kathiavad, Kachchh, Sindh, and Khandes, pp. iii-ix (Preface), Lewis Rice (1884), Sanskrit Manuscripts in Coorg and Mysore, pp. 1-2 (preface) Bernard Cohn (1996),The Command of Language and the Language of Command, pp. 17-56. Activities Continue to practice working with paper, stone, and bamboo. 5. Language and Design Topics The Art of Language Troubleshooting and Design Readings Samuel Wright (2014), From PraÅ›asti to Political Culture, pp. 397-418. Activities Class discussion; feedback; troubleshooting. 6. The Art of Script and Design Topics Scripting Stone Troubleshooting and Design Readings Wayne E Begley (1978/9), Amant Khan and the Calligraphy on the Taj Mahal, pp. 5-60. Activities Practice of class products: paper, bamboo pen, ink, inscription 7. Field visit to L.D. Indology Library and Museum Activities Practice and work continues on class projects 8. Famous Cases Topics Ashoka's Rock Edicts Group Work, Student Presentations of Work-in-Progress and Feedback Readings Romila Thapar (1997), The Policy of Dhamma, pp. 173-227. Activities Practice and work continues on class projects 9. Theorizing the Past and project work Topics Premodernity and Scribal Culture Group Work, Student Presentations of Work-in-Progress and Feedback Readings Sheldon Pollock (2007), â€˜Literary Culture and Manuscript Culture in Precolonial India,â€™ pp. 77-94. Activities Group and individual work; Feedback 10. Student Presentations and Final Work No Readings Student presentations and discussion.

Methodology: Class meetings consist of discussion of the readings as a group and hands-on work with the materials. As the course progresses we will focus more on hands-on activities and completion of projects. Specifically, class meetings will consist of: (a) Discussion on the history of writing, language, and culture in premodern India (based on readings) (b) Learning about how to make traditional writing instruments (e.g., bamboo pen, tea-based ink) (c) Practice making writing instruments in groups and individually (d) Student presentations to the class about work-in-progress.

Academic Concept: This course aims to think about writing in a holistic manner by combing practical and theoretical aspects. As an interdisciplinary course, it encourages students to engage with the theoretical aspect of language (how do we express ideas aesthetically?) and the practical aspect of language (how can language be presented on stone?). Through this exploration, students will be able to place the practice of writing in a wider context by learning about it as it was practiced in the past.

Learning Outcome: 1. Acquire holistic knowledge about writing in premodern India 2. Conceptually link theory of writing with the practice of making writing instruments 3. Understand and communicate concepts about the history of writing, language, and culture 4. Develop basic carving and craftmanship skills.

Tangible Outcome: 1. Bamboo pens 2. Hand-made ink 3. Traditional paper 4. Rock inscriptions 5. Students write their own short compositions on paper and rock

Instructor 1
Instructor Name: Samuel Wright

Brief Profile: Samuel Wright is Assistant Professor in the Division of Humanities and Languages at Ahmedabad University. He is an intellectual historian of South Asia with particular interest in the circulation of ideas, the history of knowledge, and linkages between philosophical arguments and social contexts. His research and publications engage with questions that span several early modern archives, especially those in Sanskrit and Bengali.

Why are you teaching this course?: It is an exciting experiment that will lead to a lot of learning and fun.