



DOMAIN FOR TRANSFORMATION



CENTURION UNIVERSITY

Shaping Lives... Empowering Communities!



Key Milestones of CUTM's Domain Journey



**State enacted University
with NAAC 'A' Grade
27-Aug-2010**

First Educational Institute to secure
SGSY project in 2010; First NSDC
partner.



**Odisha's first Skills
University
30-Aug-2017**

NSDC, FICCI awards, recognitions, UN
citations & Skills University status

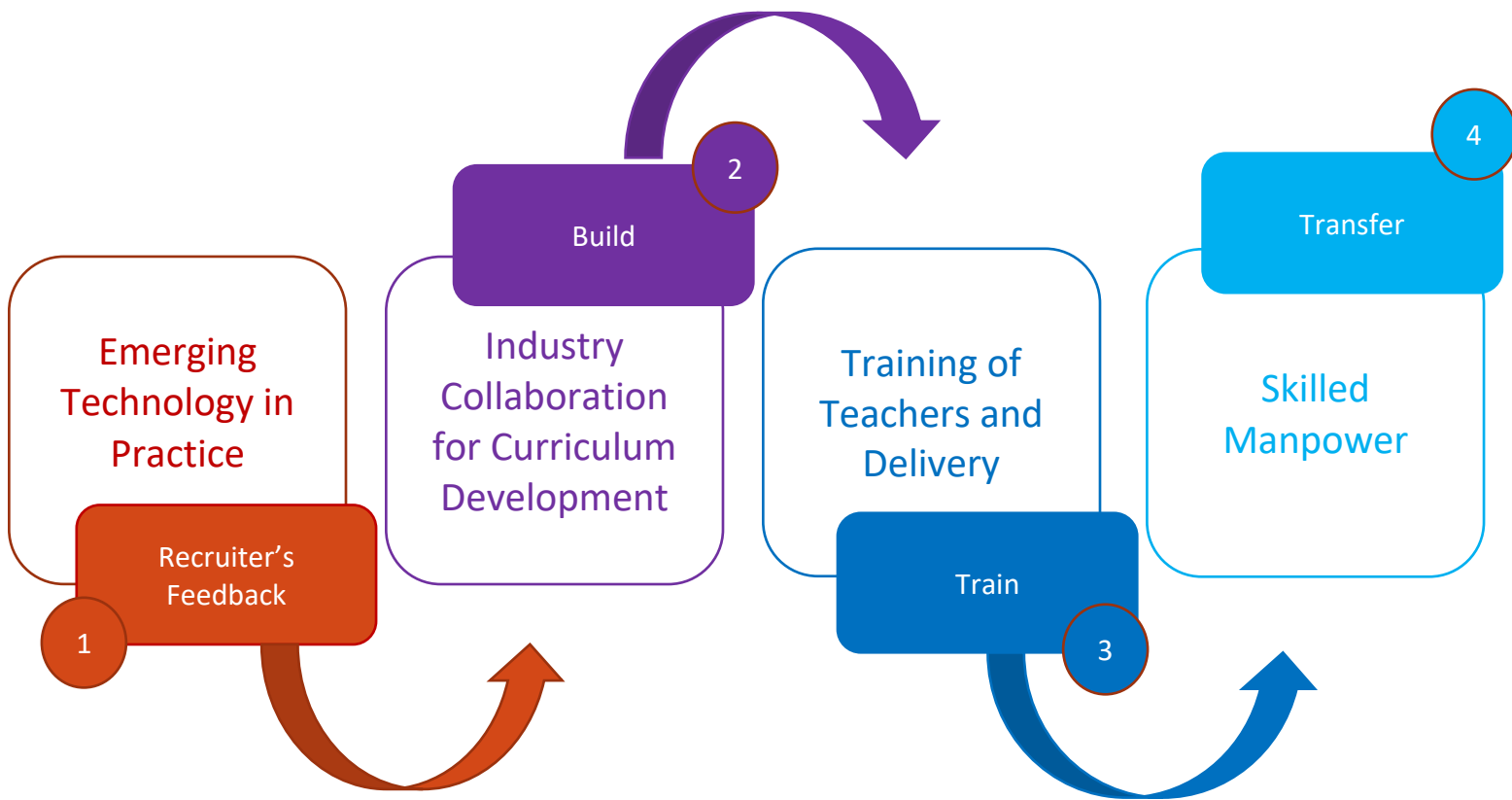


**MSDE's Awarding body
for Short Term skilling
27-Nov-2018**

Empaneled by different states for skill
assessments & certifications



The four stakeholder's perspectives



Institutional model with Industry, Academia, Government & Social entrepreneurship

- Policy, standards, funding through various schemes, governance;
- Credibility & outreach for mobilization

- Academic rigor through curriculum, Trainers, faculty
- Assessments, Certifications & qualifications for higher education



- Technical & knowledge support: equipment, curriculum, Training of trainers
- OJT & employment opportunity

- Program Implementation, Mobilization,
- Industry connect, Placements, post placements support

Building best in class training infrastructure





Domain for Transformation;

Centurion University offers programmes that follows a dynamic curriculum integrating emerging practices/technology by Industry and Research Organisations. It provides Choice Based Credit Systems with multidisciplinary courses in multiple Baskets that caters to multiple areas of in depth studies in the form of Domain.

University has got strong Industry collaborations in the area of Design, Manufacturing, Information Technology, Agriculture, Applied Sciences, Health sectors and Forensic Sciences to set up Production Labs. The Domains have been created based on these production labs to provide in depth knowledge and hands on practices. Each Domain has been developed in consultation with Industry partner in BTP model; **Building –Train-Transfer**.

Each Domain follows **Project Based Learning** leading on a real-time problem identified by the Research Centers, leading product/publication/patent. The outcome of the Domain leads to **Product-Production-Commercial**. Some of the Domain products are being manufactured and sold in the market viz; Power Transformer, E-Vehicle, Wooded Furniture, Apparel, Oil extraction from Spices, RNR 15048 Rice, Vermicompost, Mushroom, Spawn, Bio-fertilizer, Bio-pesticides, Dragon Fruits, Flowers, Tissue Culture Banana, Bio Control Agent, Hydroponic fodder, Hybrid seed, Vegetables, Dairy products, Bakery products.



CONTENT

SLNo.	Course Code	Course Title
1.	MLCU2000	DATA SCIENCE AND MACHINE LEARNING
2.	CUST2010	SOFTWARE TECHNOLOGIES
3.	ASCU2020	AERIAL SURVEYING AND REMOTE SENSING APPLICATIONS
4.	CTCU2030	CLOUD TECHNOLOGIES
5.	CSCU2040	CYBER SECURITY
6.	ESCU2050	EMBEDDED SYSTEM DESIGN
7.	ARCU2060	GAMING AND IMMERSIVE LEARNING (AR & VR)
8.	VLCU2070	CHIP DESIGN AND FABRICATION USING VLSI
9.	CSCU2080	COMMUNICATION SYSTEMS
10.	EGCU2090	OPERATION AND MAINTENANCE OF ELECTRICAL GRID SYSTEM & TRANSFORMERS
11.	LACU2100	INDUSTRIAL AUTOMATION
12.	CUCP2110	CONSTRUCTION PLANNING MONITORING AND PROJECT MANAGEMENT
13.	ARCH02251	ARCHITECTURAL AND STRUCTURAL DESIGN
14.	CDCU2130	COMPOSITE DESIGN AND MANUFACTURING
15.	GMCU2140	GO TO MARKET-PRODUCT DEVELOPMENT
16.	CUTM2016	MANUFACTURING (CONVENTIONAL, CNC AND ADDITIVE)
17.	WICU2160	WELDING AND INSPECTION
18.	AECU2170	AUTOMOBILE ENGINEERING
19.	CFCU2180	COMPUTATIONAL FLUID DYNAMICS
20.	CURE219	RENEWABLE ENERGY APPLICATIONS (4-8-10)
21.	DACU2200	DATA ANALYTICS
22.	BACU2210	BUISNESS ANALYTICS
23.	FMCU2220	SMART FARM MACHINERY
24.	OFCU2230	ORGANIC FARMING
25.	DPCU2240	DAIRY PROCESSING AND DEVELOPMENT
26.	AQCU2250	INTENSIVE AQUACULTURE
27.	SPCU2260	SEED PRODUCTION USING MANUAL AND MOLECULAR METHODS
28.	GECU2270	GENETIC ENGINEERING & GENOMICS
29.	NUCU2280	NUTRACEUTICALS
30.	AGCU2290	SMART AGRICULTURE

31	PHCU2300	PROTECTED HORTICULTURE
32	PTCU2420	PLANT TISSUE CULTURE AND VEGETATIVE PROPAGATION
33	FPCU2310	FOOD PROCESSING
34	ABCU2320	AGRI BUISNESS MANAGEMENT
35	FSCU2330	COMMODITY AND FOOD STORAGE
36	SWCU2340	SOIL AND WATER CONSERVATION THROUGH WATERSHED
37	FTCU2350	FISH PROCESSING TECHNOLOGY
38	DFCU2360	CYBER SECURITY AND DIGITAL FORENSICS
39	PCCU2370	PHARMACEUTICAL CHEMISTRY
40	HCCU2380	HEALTH CARE ASSISTANCY
41	MSCU2390	MANUFACTURING EXECUTION SYSTEM
42	RHCU2410	RETAIL AND HOSPITALITY

MLCU2000 Data Science and Machine Learning

Course Description:

Data Science is an interdisciplinary field that uses scientific methods, processes, algorithms and systems to extract knowledge and insights from noisy, structured and unstructured data, and apply knowledge and actionable insights from data across a broad range of application domains. Machine Learning is the science of getting computers to act without being explicitly programmed. The goal of this domain, Data Science and Machine Learning is to build systems and algorithms to extract knowledge, find patterns, generate insights and predictions from diverse data for various applications and visualization. The Domain deals with structured and un-structured data i.e. text, multimedia, image, video, multispectral and hyperspectral and do the data analysis like prediction, classification, clustering to solve the real life problems. Data has been collected from Internet, IoT and real life fields.



Learning Outcomes:

- Ability to Create and incorporate ML solutions in their respective fields of study.
- Ability to design and implement various machine learning algorithms in a range of real-world applications.
- Ability to design product/ publish article/ file patent

Scheme	Domain Track
Duration	6 months
Occupations	System Engineer
Entry Qualification	B. Tech/Applied Science
Minimum Age	16 Years

Progression Pathways:

- Can join industry as
 - ✓ System Engineer
 - ✓ Data Scientist
 - ✓ Data Analyst
 - ✓ Database System Manager
 - ✓ Principal NLP Engineer
 - ✓ Business Data Analyst
 - ✓ Full Stack Developer (m/f/d)
 - ✓ Machine Learning Specialist
 - ✓ AI SW & Solutions Architect

Expert Participation:

Dr. Sujata Chakravarty,
Mr. Manoj Kumar Behera

CUST2010 Software Technologies

Course Description:

Software Technology Domain is a set of activities that aim to develop, maintain, and manage an application. It is encompassing various languages, tools, frameworks, and technologies, it aims to improve students understanding of Software Development, and get students industry-ready. This domain focuses on the overall development of a computer science engineer in preparing them to be industry-ready. As per the industry standards for software development, the domain is well-designed for preparing the students as full-stack software developers.



Learning Outcomes:

- To analyze, design, and develop SRS.
- To design and develop web applications using Spring, React.
- To design and develop Android Applications.

Progression Pathways:

- Full Stack Developer using Spring, Node.js, React.js.
- Software Developer
- Web Developer
- Self-Employment through Entrepreneurship
- Higher Studies

Scheme	Domain Track
Duration	6 months
Occupations	Software Developer
Entry Qualification	B. Tech/Applied Science/Agriculture
Minimum Age	16 Years

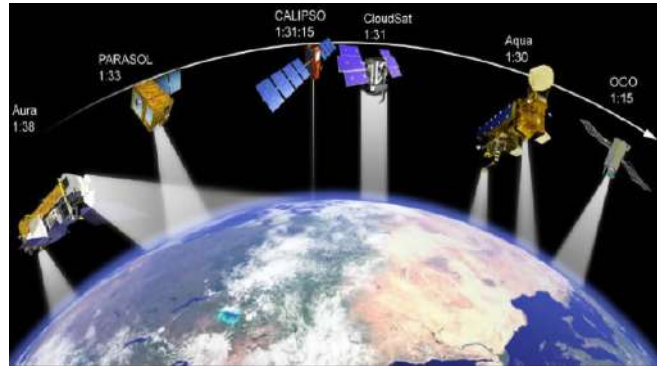
Expert Participation:

Prof. Rakesh K Ray

ASCU2020 Aerial Surveying and Remote Sensing Applications

Course Description:

Geospatial Technology (Aerial Surveying and Remote Sensing Application Domain) have high potential for better management and monitoring of day-to-day activities and short-term and long-term physical processes that affect our living environment. Several aspects of space technology have already touched the life of common people, e.g., Google Earth, GPS-enabled Mobiles and day-to-day navigation, using maps. All the technologies behind these services, when put in one basket. This includes satellite remote sensing, airborne remote sensing, photogrammetry, geographical information system (GIS), Global Positioning System (GPS), electronic surveying, laser scanning, mobile mapping, image processing, algorithms, data structures and computer programming.



Learning Outcomes:

The Aerial Surveying and Remote Sensing Application is a skill-based industry integrated domain course. It is delivered in a unique experiential learning process of interactive hands-on sessions, beginning with essential theoretical foundations, and progressing to learning how to effectively apply them in the real world. To facilitate effective learning, this technology is becoming essential for a large number of application domains, e.g., environmental sciences, civil engineering, urban development and management, water resource, geology, navigation, disaster management, forest, coastal zones, mining operations, entertainment, and many more. Geomatics encompasses the practices related to developing, managing, interpreting or analyzing geographically referenced data and includes everything that is 'spatial' in its characteristic and content. Geospatial information empowers the nation to understand its topography, natural resources and human capital and allows it to develop the requisite industrial policies to harness its resources. The objective of this domain is

Scheme	Domain Track
Duration	6 months
Occupations	GIS Engineer
Entry Qualification	B. Tech/Applied Science
Minimum Age	16 Years

- Use geospatial tools and techniques for natural resources planning and management.
- Pursue research and develop capabilities to handle multi-disciplinary field projects.
- Work in teams and demonstrate leadership skills with professional ethics

Progression Pathways:

- Indian Space Research Organization (ISRO) - [Space Application Centre (SAC), Indian Institute of Remote Sensing (IIRS), ISRO State application Centre, Orissa Space Application Centre (ORSAC)].

Expert Participation:

Dr. Prafulla Kumar Panda
Dr. Kamal Kumar Barik

CTCU2030 Cloud Technologies

Course Description:

This course enable the student to learn core services of AWS and how to use resources in Cloud. **It is mandatory for the Cloud Technology Domain students to clear AWS Solution Architect-Associate & AWS Developer-Associate Certification Examination**

Learning Outcomes:

- Able to design and deploy application using Services of AWS
- Able to develop scalable and secure Cloud applications

Progression Pathways:

- Cloud security analyst
- Cloud network engineer
- Cloud automation engineer
- Cloud consultant
- Cloud software engineer
- Cloud engineer

Expert Participation:

Prof. K V Kalyan Chakravarthy
Prof. Raj Kumar Mohanta



Scheme	Domain Track
Duration	6 months
Occupations	Cloud Engineer
Entry Qualification	B. Tech/Applied Science
Minimum Age	16 Years

CSCU2040 Cyber Security

Course Description:

Cyber security is the practice of protecting computers, servers, mobile devices, critical electronic systems, networks, and data from malicious digital attacks. Cyber security measures are designed to combat threats against networked systems and applications, whether those threats originate from inside or outside of an organization.



This course gives students an insight into the basics of cloud computing along with virtualization, cloud computing is one of the fastest growing domain from a while now. It will provide the students basic understanding about cloud and virtualization along with how one can migrate over it.

Scheme	Domain Track
Duration	6 months
Occupations	Security Engineer and Analyst
Entry Qualification	B. Tech/Applied Science
Minimum Age	16 Years

Learning Outcomes:

- Able to setup Linux server
- Able to do client and server side configuration of different services
- Able to provide security to the server
- Perform different type of attack and find the vulnerabilities
- Able to build networks and subnets
- Able to configure network devices for switching and routing
- Identify some of the factors driving the need for network security
- Aware of the various ways through which hackers' attempts to compromise an Application, Service, Desktop or a server and its countermeasures
- Establishing a methodology for vulnerability assessment and penetration testing

Progression Pathways:

- System/Network/App Penetration Tester
- Security Architect - Leaders
- System Administrator
- Security Program Manager - Leaders
- Incident Responder
- Malware Analyst
- Network Security Engineer
- Security Analyst
- Security Operations Analyst
- Intrusion Analyst

Expert Participation:

Prof. Suvendu Kumar Nayak

ESCU2050 Embedded System Design

Course Description:

The domain is offered in collaboration with Industry Partner. The students are exposed to learning interfaces between hardware (LPC2148, LPC2129, STM32, Raspberry Pi, Jetson Nano) which focus on 32-bit and 64-bit Microcontrollers and software (C, C++, Python, Micro-Python, Embedded C), troubleshooting the various issues in interfacing the hardware with the software (KEIL μ VISION, STM32 Cube MATLAB). They will learn Embedded Wired Protocols (UART, I2C, SPI, CAN), Wireless Data Protocols (HTTP, MQTT), Linux Device Driver Programming, Real-Time Operating System (FreeRTOS), Scripting Languages (Shell Scripting, Java Script), Web Development (CSS, HTML, PHP) and database (MySQL). The domain also includes hands-on Information and knowledge on various IoT-based real-time projects.



Learning Outcomes:

- Distinguish between the general computing system and Embedded System.
- Identify and develop various product-based Embedded Systems.
- Able to configure and build a customized Linux Kernel.
- Ability to set up and use Cross Development platform.
- Execute on the knowledge gained on the Embedded Systems to become an entrepreneur.

Scheme	Domain Track
Duration	6 months
Occupations	Embedded System Engineer
Entry Qualification	B. Tech/Applied Science
Minimum Age	16 Years

Progression Pathways:

- Develop Real-Time Embedded Based systems.
- Work on Real-Time Operating System & its porting.
- Working on Scripting, web development & database Languages.
- Develop IoT-based Systems.

Industry Participation:

Cranes Varsity, Bangalore

Expert Participation:

Ms. Swarna Prabha Jena
Mr. Subrat kumar Pradhan

ARCU2060 Gaming and Immersive Learning (AR & VR)

Course Description:

This course aims at helping anyone willing to learn Unity to create VR experience. No previous programming experience is required, and most of the principles covered in the course will help future Programmers wrap their head around programming basics. It features a self-learning approach. Every topic comes in on a need-to-know basis. Most of the course examples can be done with the simplest hardware. Whether you want to experiment with a simple Android or iPhone cardboard, add a remote game controller, or go for Pro hardware, the principles, techniques and code you'll take away from this course will help you deliver a full VR Experience, fast VR.



Learning Outcomes:

- Create immersive VR Experiences with panoramic video
- Create interactive head's up 3D user interfaces
- Add support for Game Controllers and Google Cardboard "Screen Touch" button.
- Use Unity Remote to test thing in the Editor
- Take advantages of Unity's Events to trigger actions on interactive objects, including loading scenes
- Bypass Unity XR SDKs
- Use Unity's Animator State Machine along with Collider Triggers, to trigger animations when passing by.

Scheme	Domain Track
Duration	6 months
Occupations	Design/Graphics Engineer/ Game Designer/Animator
Entry Qualification	B. Tech/Applied Science/ Agriculture/Management
Minimum Age	16 Years

Progression Pathways:

- Design/Graphics Engineer
- Game Designer/Animator
- 3D/2D Artist
- Game Programmer
- Audio Engineer
- Unity Developer
- Game Tester
- AR/VR Developer

Expert Participation:

Prof. Sandip Kumar

VLCU2070 Chip Design and Fabrication Using VLSI

Course Description:

The Chip Design and Fabrication using VLSI is a skill-based industry integrated domain course. It is delivered in a unique experiential learning process of interactive hands-on sessions, beginning with essential theoretical foundations, and progressing to learning how to effectively apply them in the real world. To facilitate effective learning, this is accompanied by laboratory sessions using EDA tools and FPGA development boards, mentor support, and case studies.



Learning Outcomes:

- On accomplishment of this course the students will be familiar with modern VLSI circuits and will be able to design most of them.
- Students will demonstrate an understanding of issues involved in ASIC design, including technology choice, Timing analysis, tool-flow, testability.
- Students will become an Industry-ready RTL Design/Physical design/Testing/Verification Engineer.

Scheme	Domain Track
Duration	6 months
Occupations	Chip Design and Verifications
Entry Qualification	B. Tech/Applied Science
Minimum Age	16 Years

Progression Pathways:

- Can join industry as
 - ✓ Register transfer level (RTL) design and verification Engineer
 - ✓ Physical design and verification Engineer
 - ✓ Analogue and mixed signal CMOS IC design Engineer
 - ✓ CAD tool Developer
- Higher studies and Research
- Self-employment through entrepreneurship

Industry Participation:

- Incore Semiconductor, Chennai

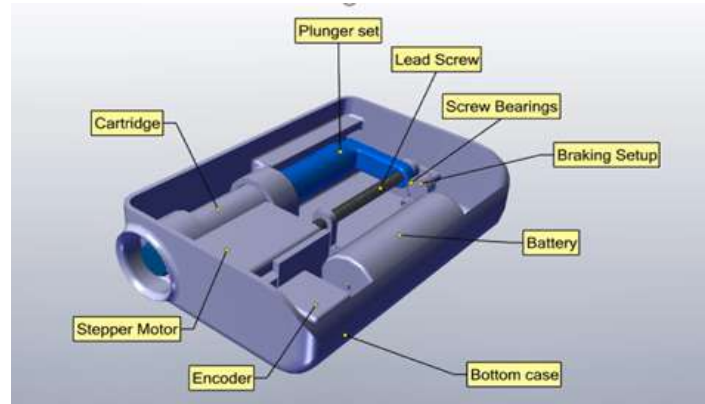
Expert Participation:

Dr. Chandra Sekhar Dash
Mr. Satyanarayan Padhy

CSCU2080 Communication Systems

Course Description:

Communication Domain is a field that focuses on designing electronic devices and circuits related to communication engineering. It is one of the most rapidly growing fields of engineering. There are communication related topics that one can study in this field, such as transmission/reception of data, antenna and wave progression, wireless communication, Internet of Things, etc.



Learning Outcomes:

- Various Communications available and their challenges in the modern era.
- Antenna designs for high-frequency applications
- Basic Mobile Tower troubleshooting and maintenance
- Installation of BTS and measuring different RF factors involved
- Analysis of existing communication protocols

Scheme	Domain Track
Duration	6 months
Occupations	Telecommunication Engineer
Entry Qualification	B. Tech/Applied Science
Minimum Age	16 Years

Progression Pathways:

- Communication Systems engineers work for defense, space, and other IT organizations, developing and designing telecommunication and signal processing systems and devices.
- Software Engineer
- RF Telecom Engineer
- Higher studies and Research
- Self-employment through entrepreneurship

Industry Participation:

- Neemhans Solution, Bhubaneswar

Expert Participation:

Dr. Harish Chandra Mohanta
Dr. Chinmayee Dora
Prof. Prabhat Pattnaik

EGCU2090 Operation and Maintenance of Electrical Grid System & Transformers

Course Description:

The primary objective is to create technically trained manpower readily available for recruitment to the power/energy companies & Transformer Manufacturing firms in Electrical Sector. The most important issue in power sector is lack of skilled manpower in all level of work force, so by the end of this course, students would be in a position to tackle the field work and technical aspect of the projects that would be helpful for them to cope up with a complex industrial as well as manufacturing site. It would also enable them to rise in career in a firm, projects and sectors.



Learning Outcomes:

- Product: Manufacturing of commercially used distribution transformer.
- Hands-on experience in Operation and maintenance procedures carried out on T & D system & apparatus
- Hands-on experience in real time testing of T & D system & apparatus
- Hands-on experience in Transformer Maintenance & Testing.

Scheme	Domain Track
Duration	6 months
Occupations	Design, Installation & Operation
Entry Qualification	B. Tech/Applied Science/Agriculture
Minimum Age	18 Years

Progression Pathways:

- Securing job in Power/Energy sector
- Securing job in Transformer Manufacturing Industry
- Becoming an entrepreneur in Power/Energy/transformer manufacturing sector
- Opt for higher study in the field of Production & Operations management, Power System etc.

Expert Participation:

Prof. Swakantik Mishra

LACU2100 Industrial Automation

Course Description:

Industrial automation is essential in present day's modern industries. Industrial automation is often understood as automating a process, but in real sense it's much more than that. Today we require product accuracy, price competitiveness, flexible product line, safety, and more products in less time, all of these are addressed by industrial automation. Industrial automation is a multidisciplinary approach, as for designing and maintaining an automatic system, requires knowledge from all disciplines of engineering.



Learning Outcomes:

After completing this program-

- Gain knowledge on advanced industrial automation
- Understand different types of Devices to which PLC input and output modules are connected
- Provide the knowledge about understand various types of mobile applications.
- Industry based project & advanced learning.

Scheme	Domain Track
Duration	6 months
Occupations	Design, Installation & Operation
Entry Qualification	B. Tech/Applied Science/Agriculture
Minimum Age	18 Years

Progression Pathways:

- Industrial Automation Engineer.
- Instrumentation & Control (I&C) Engineer
- SCADA Developer.
- PLC Project/service engineer.
- Process/Field/DCS operator.
- DCS Engineer.
- Higher studies and Research
- Self-employment through entrepreneurship

Industry Participation:

- Schneider Electric India Pvt. Ltd

Expert Participation:

Dr. Amit Ku Sahoo
Mr. Joy Choudhury

CUCP2110 Construction Planning Monitoring and Project Management

Course Description:

Concise, accurate, and legible engineering notes are necessary to document planning, design, and construction. They provide the basis for the expenditure of Federal and other funds for conservation installations. Scheduling in project management is the listing of activities, deliverables, and milestones within a project. quantity estimation is literally estimating the quantity of the physical materials/type of materials needed for that project. Professional quantity estimators draft the desired quantity required. The objectives of control are to ensure that the contractor is adequately prepared to begin a phase of work, eliminate deficiencies, and to follow through in accomplishing the work in accordance with the contract. CQM is the performance of tasks, which ensure that construction is performed according to plans and specifications, on time, within a defined budget, and a safe work environment. To demonstrate supervision of concreting tasks such as form finish concrete structure, complex structure, slip fc concreting, and concreting in extreme weather conditions. Supervise, monitor, and evaluate the performance of subordinates at the workplace.



Learning Outcomes:

- Students will plan various projects relating to advanced building technology with trust.
- Students will be churned as Construction Manager, Project Engineer, Site Supervisor and Project Consultant.
- Maintain and develop the pupils' ability to put their knowledge of theory into practice using forms of construction.

Scheme	Domain Track
Duration	6 months
Occupations	Civil Engineer
Entry Qualification	B. Tech
Minimum Age	16 Years

Progression Pathways:

- Can join industry as
 - ✓ Estimator Engineer
 - ✓ Quality Control Engineer
 - ✓ Structural Engineer

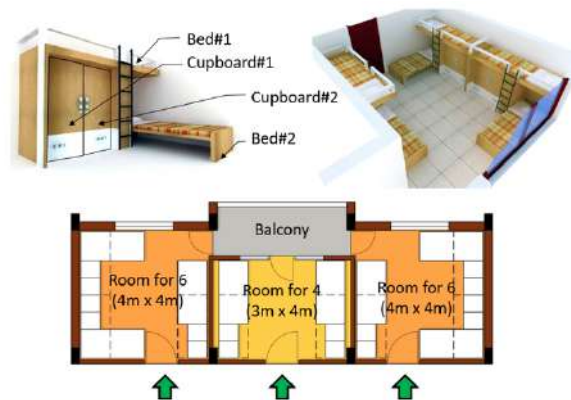
Expert Participation:

Mr. Deepak Kumar Sahu
Dr. Rajib Kumar Majhi

ARCH02251 Architectural and Structural Design

Course Description:

This domain is an excellent opportunity for students in the construction field, professionals with design backgrounds, and program developers to create a difference in the actual field through their own creativity. The course amalgams architectural drawings with structural detailing and presents in a straightforward language of 3D graphics, using cutting-edge technology like AutoCAD, CATIA, BIM modeling, etc. This course acts as a magnet for booming real estate development because all the requirements from architectural, civil, building services and estimation are interwoven and taken care of in a single course with live examples.



Learning Outcomes:

- Become an expert in effective area saving and project cost saving
- Efficient in expressing ideas with modern tools
- It is equipped with time-saving and accurate calculations.
- Ability to design product/ publish article/ file patent

Scheme	Domain Track
Duration	6 months
Occupations	Project head, site supervisor, field expert
Entry Qualification	B.Tech/B.Arch/Diploma in civil/Computer programmers/Architects/
Minimum Age	16 Years

Progression Pathways:

- Industries that welcome you
 - ✓ Construction companies
 - ✓ Interior Designers
 - ✓ Product and visual designers
 - ✓ Research institutes
 - ✓ Land and Real estate developers
 - ✓ Teaching Institutes
 - ✓ Bank estimators

Expert Participation:

Ar. Sadhana Devi
Ar. Snigdha A. Sanyal

CDCU2130 Composite design and Manufacturing

Course Description:

A composite material is a combination of two materials with different physical and chemical properties. When they are combined they create a material which is specialized to do a certain job, for instance to become stronger, lighter or resistant to electricity. They can also improve strength and stiffness. The reason for their use over traditional materials is because they improve the properties of their base materials and are applicable in many situations. Students will get familiarized with the concept, classification and application of Composite. In this domain students will be able to learn how to design a composite material using Catia software. Material properties can be studied by Biovia software. Students will get familiar with 3d experience software. Well-equipped laboratory with different types of matrix and fiber where students will do hands-on practice and fabricate different types of composite which can be used in our day to day work.



Scheme	Domain Track
Duration	6 months
Occupations	Composite Design and Manufacturer
Entry Qualification	B. Tech/Applied Science/ Agriculture/Managemnt
Minimum Age	16 Years

Learning Outcomes:

- Students will get familiarized with the concept, classification and application of Composite.
- Students will be able to do part design of composites using 3DExperience Platform
- Students will be able to design a composite using Materials Studio.
- The students will know how to test a composite and control quality.

Progression Pathways:

- In Automobile industry
- In chemical industry
- Aerospace
- Research

Expert Participation:

Dr. Dojalisa Sahu
Prof. Prajna Paramita Debata

GMCU2140 Go To Market-Product Development

Course Description:

Go To Market Domain is an innovative Digital Product Development approach from PPR- a Product itself or a Process or Resource. End to end products are designed digitally, validated digitally, Prototyped digitally, manufactured digitally and finally launched digitally. It is beneficial for Multi-disciplinary Students who can use 3D Experience Platform of Dassault Systemes -CATIA, SIMULIA, DELMIA, and ENOVIA.

Learning Outcomes:

- A Digitally Validated Innovatively and efficiently designed product.
- Experience with 3 D experience platform Catia-Simulia- Dymola and Enovia tools.
- PLM cycle management.
- Process Quality monitoring through GATE process.

Progression Pathways:

To design and modelling use Dassault Tools viz.

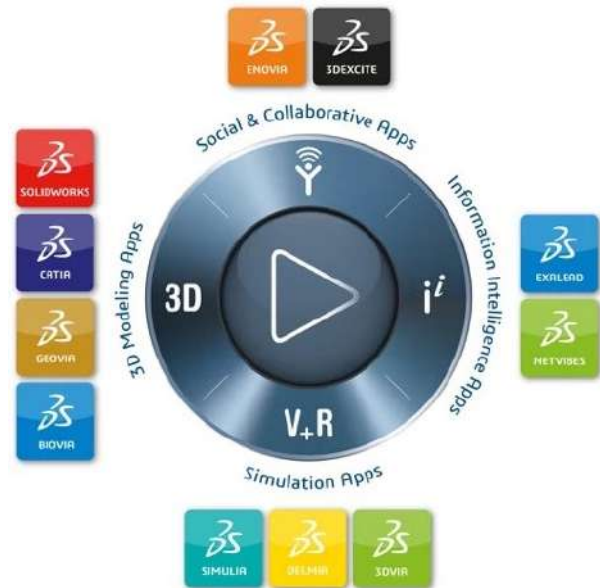
- CATIA
- ENOVIA
- DELMIA
- SIMULIA
- MODELICA

Industry Participation:

Dassault System

Expert Participation:

Prof. Murali Veeravalli
Dr. Mukundjee Pandey



Scheme	Domain Track
Duration	6 months
Occupations	Product Development
Entry Qualification	Agriculture, B. Tech/Applied Science, Management
Minimum Age	16 Years

CUTM2016 Manufacturing (Conventional, CNC and Additive)

Course Description:

The **Manufacturing (Conventional, CNC & Additive)** domain has been a leader in providing a course for the Engineering students. Operating conventional and unconventional machinery takes a variety of skills. The domain offers hands-on training in the *Jigs and Fixtures, Process Planning and Cost Estimation, Conventional Machining for Cylindrical Shape Component, Conventional Machining for Prismatic Shape Component, CNC Machining, Non-Traditional Machining, 3D Printing, and Wood Engineering*. All the subjects or sections also incorporate learning & applications of new age designing –analysis-manufacturing software like AutoCAD, CATIA, Pro-E, Master CAM, and ANSYS. Each Student is guided continuously and monitored throughout for developing products with a *broader social and institutional context of sustainability and effective transformation* to become an Industry Ready.



Learning Outcomes:

Students will able to

1. Operative machine tools effectively & efficiently

2. Produce components/products by executing various operations with desired accuracy & finish

Scheme	Domain Track
Duration	6 months
Occupations	Design, Installation & Manufacture
Entry Qualification	B. Tech/Applied Science
Minimum Age	16 Years

Progression Pathways:

- Graduate Engineer Trainee & Production Engineer (Process, Production, and Project Management Support)
- Construction
- Marketing
- Technical service or Maintenance Support
- Research

Expert Participation:

Dr. Ardhendu Mouli Mohanty
Dr. Santosh Patro
Prof. Dillip Mohanta

WICU2160 Welding and Inspection

Course Description:

Basic welding knowledge can enhance chances of employment. The industrial sectors like fabrication units, high pressure boilers manufacture, ship building, automobile, space engineering and cross-country pipelines require welding skill. Learning of quality and reliability criteria to be met by welded joints and standards will empower students for placement. More specifically, this domain will expose students on technological and institutional aspects of welding, both in theory and practice.



Learning Outcomes:

- Welding certification will make the candidate recognised in national and international levels in the industry
- He/she can be self-employed by opening a small scale welding shop to a medium scale industry
- Can produce Welding Design as per requirement using Dassault Welding Design module
Suggest suitable Welds, based on Strength, Failure and Reliability

Scheme	Domain Track
Duration	6 months
Occupations	Design, Installation and Manufacture
Entry Qualification	B. Tech/Applied Science
Minimum Age	16 Years

Progression Pathways:

- ASNT Level II (LPI and UT) or NSQF skill certification will make the candidate recognised in national and international levels in the industry as qualified welding inspector.
- He/she can be self employed by opening a small-scale welding shop to a medium scale industry.
- Student has huge scope for conducting research work for presenting in international conference and publishing in journal, which can lift his career to greater heights.

Expert Participation:

Dr. Ardhendu Mouli Mohanty
Prof. Sudeep Kumar Singh

AECU2170 Automobile Engineering

Course Description:

The domain is intended to give hands on training for repairing and maintenance of two wheelers, four wheelers and heavy commercial vehicles. Students are exposed to different types of advanced and special purpose tools to diagnose the fault in automobiles. Students learn troubleshooting of different parts of automobile by disassembling and assembling each subsystem. This domain also enhances the entrepreneurial skill of students which enables them to explore business opportunities in various sectors of automobile.



Learning Outcomes:

- To familiarise the students with different systems and subsystems of automobile
- To teach basic skill in maintenance of different types of automobiles.
- To know the operation and maintenance of electric vehicle.

Scheme	Domain Track
Duration	6 months
Occupations	Automobile Engineer
Entry Qualification	B. Tech/Applied Science/Agriculture
Minimum Age	16 Years

Progression Pathways:

- Can join industry as
 - ✓ Engineer in Original Equipment Manufacturers (OEMs) and automobile ancillary industries.
 - ✓ Service engineer in automobile service stations.
 - ✓ Employment in automobile dealerships and construction equipment dealerships (Sales, Service, Spare parts)
 - ✓ Employment in automobile ancillary industries.
 - ✓ Employment in Research and Development (R and D) Sector.

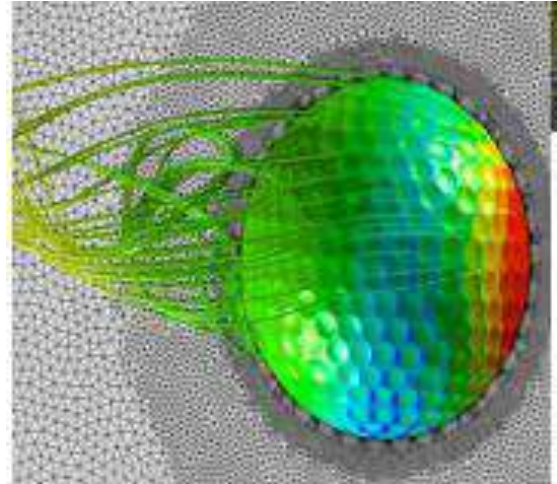
Expert Participation:

Mr. Manash Ranjan Dash

CFCU2180 Computational Fluid Dynamics

Course Description:

Computational Fluid Dynamics (CFD) is the process of mathematically modeling a physical phenomenon involving fluid flow and solving it numerically using computational prowess. In the present scenario, the Computational techniques easily complement the experimental and theoretical techniques in solving the problems with high complexity as the computation reduces the engineering testing costs, product-to-market time, and costs as well as provides comprehensive data which are not easily obtainable from experimental tests. Hence CFD is routinely used today in a wide variety of disciplines and industries, including aerospace, automotive, power generation, chemical manufacturing, polymer processing, petroleum exploration, medical research, meteorology, astrophysics, etc.



Learning Outcomes:

- To impart knowledge about various computational methods for fluid flow and heat transfer problems so as to enable the students to write computer programs for solving elementary fluid dynamics/heat transfer problems.
- To execute the industry projects so as to produce Quality products to the Clients.

Scheme	Domain Track
Duration	6 months
Occupations	Aerospace, automotive, power generation, chemical manufacturing, polymer processing, petroleum exploration, medical research
Entry Qualification	B. Tech/Applied Science
Minimum Age	16 Years

Progression Pathways:

CFD offers career opportunities in variety of Industries and R&D sectors on the specific interest and skill set of the students.

The different areas are:

- Code development
 - Development of various modules of CFD software
 - Can be for general purpose software or for codes for specific application

Expert Participation:

Dr. Ashok Mishra

CURE219 Renewable Energy Applications (4-8-10)

Course Description:

This is a domain course to provide theory/practice/project work in the study of Materials for Renewable Energy applications, Renewable Energy Technology for Industrial Process, Micro-grid Design & Implementation, Hybrid Renewable Energy Systems, Solar Off-grid Entrepreneur, Project, and Internship in renewable energy applications.



Learning Outcomes:

After completing this program-

- The trainee will be exposed to materials used in renewable energy systems.
- The trainee will be able to deliver renewable energy technologies and its applications.
- The trainee will expert on load calculation, design, and installation of solar/thermal/wind system.
- The trainee will implement activities to meet desired outcomes of Skills/Placement/Higher studies.

Scheme	Domain Track
Duration	6 months
Occupations	Design, Installation & Operation
Entry Qualification	B. Tech/Applied Science/Agriculture
Minimum Age	18 Years

Progression Pathways:

- Can join industry as an installer to solar/thermal/wind/biogas system and can reach up to project manage.
- Can become a Quality Assurance person in renewable energy field.
- Can do Industrial or any Advance course in the same.
- Can become industry-ready in entrepreneurship in the related field.

Industry Participation:

- Schneider Electric India Pvt. Ltd.; 2. SELCO Foundation, Odisha; 3. Material Studiobis

Expert Participation:

Dr. Rajendra Kumar Khadanga, Associate Professor, Dept. of EEE, CUTM, Odisha
 Dr. Saubhgyalaxmi Behera, Associate Professor, Dept. of Pysics, CUTM, Odisha
 Prof. Debashree Debadatta Behera, Assistant Professor, Dept. of Mechanical, CUTM, Odisha
 Prof. Nimay Chandra Giri, Assistant Professor, Dept. of ECE, CUTM, Odisha
 Prof. Surya Narayan Sahu, Assistant Professor, Dept. of EEE, CUTM, Odisha
 Prof. Smruti Ranjan Nayak, Assistant Professor, Dept. of ECE, CUTM, Odisha

DACU2200 Data Analytics

Course Description:

Data analytics is a fastest growing field. About 2.5 quintillion bytes of data are created every day and that pace is only quickening. To process the massive amounts of data we need more effective algorithms. This is made possible by the Application of Data Analytics. Data Analytics is the application of structured statistical and mathematical techniques on collected data in order to detect underlying patterns as well as make predictions.

This explosion of data is driving the industry that leverages it; as organizations' data collection grows in scope and sophistication, it's inevitable that they'll want to make use of that data, and Data Analysts are at the forefront of this trend.

This domain deals with hands on in Python, Tableau, NLP, SQL and Dash boarding. Learning will go together with implementation in various case study and project. Once these tools are understood in its second part it deals with story boarding and implementation as a capstone project. It will enable full freedom and flexibility to apply your learning in your own area of interest.



Scheme	Domain Track
Duration	Six months
Occupations	1. Data Architect/ Scientist/ Engineer
Entry Qualification	B. Tech
Minimum Age	16 Years

Learning Outcomes:

- Students will be able to apply statistical analysis and technologies on data to find trends and solve problems.
- Students can build up effective story line from data for visualization, prediction and prescription
- Students will learn the different programming languages, platforms, and associated tools.

Progression Pathways:

- Develop Real-Time University Dashboard for tracking Admission intake, Fee collection etc.
- Working on customer data for automatic loan sanction as per Bank pre-defined eligibility criteria.

Industry Participation:

Hitachi Vantara

Expert Participation:

Mr. Amit Kumar

BACU2210 Business Analytics

Course Description:

Business analytics is all about taking in and processing historical business data. Analyzing that data to identify trends, patterns, and root causes. Making data driven Business decisions based on data insights. This domain deals with hands on in Python, Tableau and Excel and its implementation with various case study and project. Once these tools are understood in its second part it deals with its implementation in popular field like Finance, Marketing and Agriculture. In the last part it has capstone project to provide you overall feeling of domain. This consists only of project and will give you full freedom and flexibility to apply your learning in your own area of interest.



Learning Outcomes:

1. Students can apply data analytics tool in different domain
2. Students will be able to make inferences using different analytics tools.

Scheme	Domain Track
Duration	6 months
Occupations	Business Analyst
Entry Qualification	B. Tech/Applied Science/Management
Minimum Age	16 Years

Progression Pathways:

Career Scope: We need a new Career Scope Outcomes in Bullet Points.

- *Big Data Analytics Architect*
- *Big Data Engineer*
- *Financial Analyst*
- *Marketing Analytics Manager*
- *Business Intelligence and Analytics Consultant*
- *Analytics Associate Metrics and Analytics Specialist Database Administrator*
- *Fraud Analyst*
- *Retail Sales Analyst*
- *Statistician*
- *Data Scientist*
- *Data Visualization Analyst etc.*

Expert Participation:

Prof. Amit Kumar

FMCU2220 Smart Farm Machinery

Course Description:

This domain begins with the student's survey on the farmer's field to understand the mechanization-related problems they face. Based on their feedback, they will find the solution through smart technology. In order to get this, students will be taught concepts of farm machinery design and applications of sensors and actuators to make the machine smart. Making of 3D models of implements/machines and their simulation using Dassault software like CATIA and SOLIDWORKS will be practiced. Machine learning tools i.e. PYTHON



and MATLAB will be taught. In addition, the students will be skilled in piloting the drone. Prominently, students will go through the training/internship program in domain-specific organizations i.e. tractor and farm machinery testing and training centers to understand the depth of the domain. After learning all these, students will take the project to develop a prototype of smart agricultural machinery and test it under actual field conditions.

Learning Outcomes:

- Students will be able to think how to apply smart technologies in farm machinery
- Students will be able to design and simulate 3D model of machinery.
- Students will be able to develop a prototype of smart machine based on farmers feedback.
- Students will be able to test the machine in real field conditions.

Scheme	Domain Track
Duration	6 months
Occupations	Agriculture
Entry Qualification	Agriculture/ Agri Engineering/Phyto pharma/ Dairy tech/ fisheries/ biological sciences/Physical Science/B.Tech
Minimum Age	16 Years

Progression Pathways:

- Placement in Research & Development sector and marketing sector in tractor and farm machinery industries like John Deere, Kubota, Mahindra and Mahindra etc.
- Help in qualifying the post graduate entrance exams like GATE and JRF.
- Development of prototype of agricultural machines and start their own business.

Expert Participation:

Dr. Shekhar Kumar Sahu

OFCU2230 Organic Farming

Course Description:

Domain organic farming is designed to impart skill and practical knowledge to students for production of quality organic produce adhering to organic certification standard protocol and sale of the produce obtained through appropriate marketing channel that fetches premium market price. The course deals with production of field and horticultural crops under organic management. Moreover, provides hands on experience on isolation, characterization, mass multiplication and application of biofertilizer and biopesticides, respectively. This domain mainly familiarizes the students in management of inputs in organic farms and helps them to become a skilled professional after successful completion.



Learning Outcomes:

- Students after acquiring knowledge of organic farming can function as skilled practitioner, consultant and as an Agri-entrepreneur.

Progression Pathways:

- Efficient management of organic inputs
- To function as skilled practitioner, consultant and as an Agri-entrepreneur in organic farming
- Biofertilizer isolation, characterization, mass multiplication and application.

Expert Participation:

Dr. Saurav Barman

Scheme	Domain Track
Duration	6 months
Occupations	Organic Agricultural or Food Scientist
Entry Qualification	Agriculture/ Agri Engineering/Phyto pharma/ Dairy tech/ fisheries/ biological sciences
Minimum Age	16 Years

DPCU2240 Dairy Processing and Development

Course Description:

The domain will accustom students about the processing of raw milk besides, developing skills to handle unit operations and dairy processing machineries. Furthermore, it also aspires to provide hands-on experience to prepare different dairy products, overview on probiotic starter cultures, prebiotics and synbiotic dairy foods as well as evaluate quality of milk and milk products. Overall, the track targets to assign some credits to students to perform their project work under supervision of departmental teachers.



Learning Outcomes:

- Able to prepare standardized milk as well as able to handle and maintain equipment related to raw milk processing.
- Implement improvement strategies on developing better dairy starters for the production of fermented foods with therapeutic properties.
- Detect adulterants, preservatives and neutralizers in milk and milk products.

Scheme	Domain Track
Duration	6 months
Occupations	Dairy Processing
Entry Qualification	Agriculture/ Agri Engineering/Phyto pharma/ Dairy tech/ fisheries/ biological sciences/Physical Science/.B.Tech
Minimum Age	16 Years

Progression Pathways:

- Food Safety Officer
- Milk Procurement Officer
- Dairy Extension Officer
- QA/QC Executive/Manager
- Milk Chemist/ Microbiologist
- Logistics and Distribution Manager
- Dairy Plant Manager/Technical Officer
- Dairy Consultant

Expert Participation:

Dr. Rajashree Jena

AQCU2250 Intensive Aquaculture

Course Description:

In this domain students are encouraged to design aquaculture rearing systems like Biofloc, Recirculatory Aquaculture System, Aquaponics as per the industry needs. Students learn to develop SOPs for commercial production of food and ornamental fish besides feed manufacturing and management, health management, water quality management. Students develop skills for seed production of Indian Major Carps, Tilapia, Gold Fish, Molly, Platy, Angel Fish, Guppy etc. The domain motivates the students in enhancing their entrepreneurship development capabilities in the field of aquaculture. The school is committed to use IOTs for developing smart intensive aquaculture for commercial production of fishes. The domain helps the students to be technically skilled and ready for career placement in industries and companies like fish and shrimp hatcheries, feed manufacturing companies, aquaclinics, research institutes and R&D departments



Learning Outcomes:

- Ability to Create and incorporate ML solutions in their respective fields of study.
- Ability to design and implement various machine learning algorithms in a range of real-world applications.
- Ability to design product/ publish article/ file patent

Scheme	Domain Track
Duration	6 months
Occupations	Technical Consultant (Aquaculture)
Entry Qualification	Agriculture/ Agri Engineering/Phyto pharma/ Dairy tech/ fisheries/ biological sciences
Minimum Age	16 Years

Progression Pathways:

- Can join industry as
 - ✓ Fish and shrimp hatcheries
 - ✓ Feed manufacturing companies,
 - ✓ aqua clinics,
 - ✓ Research institutes
 - ✓ Consultancy
 - ✓ Entrepreneurships

Expert Participation:

Dr. Sambid Swain
Dr. Mangesh M. Bhosale

SPCU2260 Seed Production Using Manual and Molecular Methods

Course Description:

To acquaint students with conventional and modern breeding methods and its viable application in varietal development. To impart a comprehensive knowledge of seed production in vegetable and cereal crops with adequate practical training. To apprise students with the legislative provisions and processes as well as the mechanisms of quality control and seed certification.



Learning Outcomes:

At the end of this domain, students will enrich their Experiential Learning, practical knowledge and hands on training on

- Emasculation and pollination technique for hybrid seed production
- Application of molecular marker in seed production
- Variety and hybrid seed production of cereals and vegetable crops
- Physical and genetic purity test of quality seed production
- Various methods of seed extraction and
- Seed certification process.

Scheme	Domain Track
Duration	6 months
Occupations	Seed Health Analyst
Entry	Agriculture/ Agri Engineering/Phyto pharma/
Qualification	Dairy tech/ fisheries/ biological sciences
Minimum Age	16 Years

Progression Pathways:

- Research institute
- Seed production farms
- Seed testing laboratories and Seed processing unit

Expert Participation:

Dr. Pusarla Susmitha
Dr. Aninda Chakraborty
Dr. Siddhartha Shankar Sharma
Dr. Sanghamitra Rou

GECU2270 Genetic Engineering & Genomics

Course Description:

Genetic Engineering and Genomics is considered to be one of the advanced and cutting-edge researches in the field of biological sciences and thus the curriculum structure of this domain is largely meant to enrich the scientific temper among the young minds. Advanced topics including Computational Biology, Genetic Engineering and its applications, Genetics and Genomics have been included so as to disseminate the technical know-how to learners which would be extremely significant for their future endeavours. The course structure of Genetic Engineering and Genomics domain is largely targeted for undergraduate and postgraduate students.



Learning Outcomes:

- ✓ Understand the properties of DNA, RNA, and proteins, the relationships among these molecules, and some biological questions that have puzzled researchers.
- ✓ Read and understand solutions to computational problems, which will be formalized as a series of tasks.
- ✓ Understand and analyze general approaches for solving computational problems and learners will be able to apply these approaches to new problems they encounter.
- ✓ Manipulate specific genes to produce desired traits, and how to address current problems faced by humanity.
- ✓ Understand and analyse the methods to modify genes to create Genetically Modified Organisms (GMOs) and example applications of bacteria, plant and animal GMOs.

Scheme	Domain Track
Duration	6 months
Occupations	Genetic Engineer
Entry Qualification	Applied Science
Minimum Age	16 Years

Progression Pathways:

- Can join industry as
 - ✓ Data scientists, genomics researcher, life scientists, genetic counsellor are some of the relevant positions offered to skilled personals in the industrial sector.
 - ✓ Graduates can also build up their own start-ups.

Expert Participation:

Dr Rukmani Mishra

NUCU2280 Nutraceuticals

Course Description:

This course aims at training the students to develop viz. Personalized Food and Medicine, Biopesticides and Biofertilizers and Immune Boosters.

Learning Outcomes:

- To understand Functional foods and their effects on human health
- To understand the role of antioxidants, polyphenols, omega-3 fatty acids, to prevent different physiological disorders.
- To Understand the importance of personalized food with respect to nutrigenetics.
- To be able to design a drug molecule and identify its applications
- To be able to analyze nanomaterials and use it as Bio-Pesticides and Biofertilizers,
- To be able to design a drug molecule and identify its applications.
- To be able to illustrate the structure of Protein, Pharmacophores



Progression Pathways:

- Nutritionist
- Research
- Food and Nutraceutical Industry
- Nutritionist
- Food processing unit operator
- Entrepreneur

Scheme	Domain Track
Duration	6 months
Occupations	Nutraceuticals
Entry Qualification	Agriculture/Agriculture/ Agri Engineering/Phyto pharma/ Dairy tech/ fisheries/ biological sciences/ Pharmacy and Allied Health
Minimum Age	16 Years

Expert Participation:

Dr. Poulami Sil
Dr. Preetha Bhadra

AGCU2290 Smart Agriculture

Course Description:

Smart Agriculture domain is designed to impart skill and practical knowledge to the students on precision agriculture through application of IOT, UAV and mobile app-based crop management. The course deals in production of gerbera, dendrobium orchid and Dutch rose by IoT-based management of in greenhouse, precision management of low GI rice with Paddy Predict and Kalgudi app and use of UAV for crop health monitoring and management. Students will also learn growing exotic vegetables under soilless culture. Students become familiar with handling of various precision tools used in agriculture . More emphasis is given on practice and project as the students become skilled professional / human resources after successful completion.



Learning Outcomes:

- Production of cutflowers under protected cultivation.
- Management of micro-climate under IoT based automated polyhouse
- Precision crop management

Scheme	Domain Track
Duration	6 months
Occupations	Agriculture Technician
Entry Qualification	Agriculture/ Agri Engineering/Phyto pharma/ Dairy tech/ fisheries/ biological sciences/Physical Science.B.Tech
Minimum Age	16 Years

Progression Pathways:

- Production of cut flowers under protected cultivation.
- Management of micro-climate under IoT based automated polyhouse.
- Precision crop management

Expert Participation:

Dr. Sagar Maitra
Dr. Dinkar J. Gaikwad
Dr. Lalichetti Sagar
Dr. Sunna Deepti

PHCU2300 Protected Horticulture

Course Description:

The Domain Protected Horticulture delineate the Horticultural crop (vegetables, fruits, flowers, medicinal, aromatic crops etc.) cultivation under controlled conditions through modification of the natural environment by practices and structures to achieve optimal productivity by increasing qualitative and quantitative yield.



Learning Outcomes:

- Hands on experience on Protected cultivation: method and techniques
- Knowledge for Polyhouse cultivation of vegetables, flower, fruits etc.
- Practice on production management of flower, medicinal and aromatic crops
- Scale up trade, market and agriculture economics

Scheme	Domain Track
Duration	6 months
Occupations	Horticulture
Entry Qualification	Agriculture/ Agri Engineering/Phyto pharma/ Dairy tech/ fisheries/ biological sciences/Physical Sciences
Minimum Age	16 Years

Progression Pathways:

- Horticulture and allied sector
- Horticulture nursery and farms
- Greenhouse farming

Expert Participation:

Dr. Nilanjana Datta
Dr. Sunna Deepti

PTCU2420 PLANT TISSUE CULTURE AND VEGETATIVE PROPAGATION

Course Description:

Plant Tissue Culture and Vegetative Propagation is an unique combination to get acquainted with various advanced techniques associated with propagation of commercially important plants and safeguard the endangered species. The domain can take students through hands-on experience in state-of-art research laboratory facilities and field-work oriented techniques like grafting, cutting, budding, etc. A very important accomplishment for students is to inculcate the industry-academia blended knowledge to evolve as a researcher leading to entrepreneurship.



Learning Outcomes:

- Operational industry-based skills.
- Molecular level evaluation of tissue culture raised plants for genetic fidelity and high yield.
- Techniques involved in large-scale production of commercially important plants like Bamboo, Banana, Gerbera, etc.
- Safeguarding the endangered species.
- Huge scope for a student to evolve as a researcher as well as an entrepreneur.

Scheme	Domain Track
Duration	6 months
Occupations	Scientist/Entrepreneur
Entry	Agriculture/ Agri Engineering/
Qualification	Biological sciences/Botany/Zoology
Minimum Age	16 Years

Progression Pathways:

- An Entrepreneur
- Researcher
- Agriculturist
- Floriculturist
- Scientist

Expert Participation:

Dr. Pushpalatha Ganesh

FPCU2310 Food Processing

Course Description:

Students get hands-on experience in various food processing/preservation methods such as hot air drying, freeze-drying, extraction of essential oils, pickling, jam, jelly, sauce and candy preparation, wine preparation etc. Students develop and assemble food processing equipment based on modern technologies such as Microwave Assisted Extraction, IR dryer etc. They are involved in developing innovative food products viz. cup-cake from ragi and starch free potato residue and vitamin and fibre enriched curd. They learn to use equipment for determining the food composition. University is equipped with various analytical equipment including HPLC which students use for food product characterization. Students have made edible film from potato starch and are working to utilize other agro wastes for biodegradable packaging to address environmental issues. Students undergo internship in small scale bakery unit, mini dairy unit and SC-CO 2 extraction unit where they gain skills and confidence of working in large production plants.



Learning Outcomes:

- Operate and maintain processing equipment
- Formulate and make processed food products
- Adopt hygienic and sanitation practices during product preparation
- Understand and develop HACCP plans based on the standards and regulations
- Perform sensory evaluation and develop nutrition labels for food products

Scheme	Domain Track
Duration	6 months
Occupations	Food Processing
Entry Qualification	Agriculture/ Agri Engineering/Phyto pharma/ Dairy tech/ fisheries/ biological sciences/Physical Science.B.Tech/Management
Minimum Age	16 Years

Progression Pathways:

- Students developing aptitude for work and right skills will find ample job opportunities in public and private sector, food research laboratories, catering companies, food wholesalers, restaurants etc.
- It will lay base for students to pursue certification courses in nutrition, IPR, food preservation etc.
- Students could become entrepreneurs in starting food business.

Expert Participation:

Dr. Ruby Pandey
Dr. Kakani Grihalakshmi

ABCU2320 Agri Buisness Management

Course Description:

The ABM program offered at CUTM, Paralakhemundi, is uniquely focused on the food and agribusiness sector, emphasizing business and economic analysis. The courses are specifically structured to equip students with the requisite knowledge, skills, and outlooks for agribusiness managerial and entrepreneurial decision-making and execution. About 60% of the total program duration is assigned to the field-work segment (FWS) for experiential and practice-oriented learning. In the FWS of the program, students get opportunities to apply their classroom learning and sharpen their creative ability to solve problems in real-world scenarios.



Learning Outcomes:

- Understand the specifics of Agribusiness management
- Decision-making abilities
- Capacity for critical thinking
- Demonstrate selling and promotion of agriculture product/services
- Ability to develop collaborative and professional relationships
- Improve Oral and written communication
- Prepare students for careers in Agribusiness

Scheme	Domain Track
Duration	6 months
Occupations	Agri Engineer/Agri Manager
Entry Qualification	B. Tech/Applied Science/ Agriculture/Management
Minimum Age	16 Years

Progression Pathways:

- Banks (PRIVATE & PUBLIC SECTOR)
- Agricultural Technology Companies (DEHAAT, CROPIN)
- Agricultural Value Chain Aggregators (ARYA, SAMUNNATI)
- Agricultural Consulting Companies (KPMG, BASIX)
- Market Research Companies (CRISIL, ICRA)
- Commodity Research Companies (TRANSGRAPH, KUNVARJI)
- Commodity Trading Companies (MCX, NCDEX)

Expert Participation:

Prof Jonnalagadda Anil Kumar
Dr. Durga Prasad Padhi
Dr. Ratnagiri Divakar
Dr. Kakani Grihalakshmi

FSCU2330 Commodity and Food Storage

Course Description:

This domain focus on the various factors responsible for the deterioration or loss of a commodity or food products under storage condition. It also deals with the techniques and methods required to prevent such damage.

Learning Outcomes:

- Thorough knowledge on safe storage of commodity and food
- Skill development on Identification of pests and diseases and their management
- Hands-on Training of new techniques in storage
- Practical exposure to commercial safety procedures and maintenance of commodity and food in storage
- Knowledge on food security issues

Progression Pathways:

- Warehouse Manager
- Food safety officer
- Storage administrator
- Agricultural Commodities Inspector
- Agricultural Specialist

Expert Participation:

Dr. Nihal



Scheme	Domain Track
Duration	6 months
Occupations	Food Safety Officer
Entry Qualification	B. Tech/Applied Science/ Agriculture/Managemnt
Minimum Age	16 Years

SWCU2340 Soil and Water Conservation through Watershed

Course Description:

The Soil and Water Conservation through Watershed domain provides fundamental knowledge of statistical analysis of hydrological data along with visualization of the data using R-programming and Geo-spatial application in watershed management using ArcGIS software. The students will have knowledge of various rainwater harvesting structures, techniques for Integrated watershed management and hand-on practices on hydrological models such as SWAT and HEC-RAS for simulated watershed processes.



Learning Outcomes:

- Analyzing and visualization of watershed data using R Programming
- Application of different hydrological models to simulate watershed process
- Application of rainwater harvesting in an integrated watershed management approach
- Application of geospatial tools and environment to achieve project objectives

Scheme	Domain Track
Duration	6 months
Occupations	Soil Conservation Officer
Entry Qualification	B. Tech/Applied Science/ Agriculture// Agri Engineering/Phyto pharma/ Dairy tech/ fisheries/ biological sciences
Minimum Age	16 Years

Progression Pathways:

- Analyzing and visualization of watershed data using R Programming
- Application of different hydrological models to simulate watershed process
- Application of rainwater harvesting in an integrated watershed management approach
- Application of geospatial tools and environment to achieve project objectives

Expert Participation:

Mr. Subhankar Debnath
Dr. Santosh D.T.

FTCU2350 FISH PROCESSING TECHNOLOGY

Course Description:

The domain Fish Processing Technology empowers the students to understand novel technologies applied in processing for product development of dry fish, salted and smoked fish, frozen fillets, mince based products like surimi, ham and sausage using fish deboner and mincer equipments and did packaging using vacuum packaging machine. Knowledge on Fish byproduct valorization into value added products such as silage, fish protein hydrolysate, chitin, chitosan and collagen. Besides value added fish products, the domain provides hands on experience on quality assessment of fish and fishery products using microbiological techniques like, TPC, identification of fish spoilage organism like *S. aureus*, *E. coli*, *C. botulinum* etc, and biochemical techniques like, Proximate composition, TMA, TVB-N, TBARS and PV. Students also experienced educational visits to top fish processing and training institutes like ICAR-CIFT and NIFPHATT. This domain makes students technically skilled and ready for career placement in industries and companies like fish and shrimp processing, research institutes, R&D departments, food processing industries, food quality analysis laboratories. Students also developed entrepreneur skills through this domain.



Learning Outcomes:

- Students will familiarize with handling and preservation after harvesting of fish.
- Students will familiarize with different fish quality estimation parameters.
- Students will obtain enough practical knowledge in all aspects of fish product development and value-addition.

Scheme	Domain Track
Duration	6 months
Occupations	Fish Processing
Entry Qualification	B. Tech/Applied Science/ Agriculture
Minimum Age	16 Years

Progression Pathways:

- Food Inspector
- Executive Sea Food Processing

Expert Participation:

Dr. Sambid Swain

DFCU2360 Cyber Security and Digital Forensics

Course Description:

This domain focusses on two aspects of Cyber Security: analysis and assessment of risk plus how to minimize it, and, how to extract and use digital information from a wide range of systems and devices.



Learning Outcomes:

- Domain will cover basic digital forensics and network security, and also cover computer system tools and the Linux/UNIX operating system which are highly essential in cyber world.
- Able to deal with digital evidence in a professional manner (that includes adhering to appropriate legal guidelines).
- It will then follow either the Cyber Security or Digital Forensics pathway within the course (though each lead to the same named degree: the pathways are simply opportunities to specialize within the field).
- This domain track is useful to achieve professional certification from US Council, EC Council, Offensive Security and many more.

Scheme	Domain Track
Duration	6 months
Occupations	Digital Forensics Investigator
Entry Qualification	B. Tech/Applied Science
Minimum Age	16 Years

Progression Pathways:

- Computer security practitioner
- Security auditor
- Security architect
- Network security manager
- Chief Information Security Officer
- Forensic Computer Analyst
- Information Security Analyst
- Penetration Tester
- Digital Forensics Specialist
- IT Security Engineer
- Security Systems Administrator
- Digital Forensics Investigator

Expert Participation:

Prof. Sangram Routray

PCCU2370 PHARMACEUTICAL CHEMISTRY

Course Description:

Designing and synthesizing physiologically active compounds is the focus of pharmaceutical (medicinal) chemistry. The goal is to acquire new chemical molecules that could facilitate the discovery of novel medicines or optimize currently established drug structures hence increasing the range of available chemical therapeutics. Even though organic chemistry is essential only skilled pharmaceutical chemists can collaborate with scientists of other field such as molecular biology, structural biology, pharmacology, physical chemistry, biochemistry, pharmacokinetics, pharmaceutical technology, toxicology etc., and work effectively in interdisciplinary environment.



Learning Outcomes:

- To know various types of drugs and its application towards the diseases.
- To understand physical and chemical behavior of drugs by using instrumental methods.
- Students will understand different physico-chemical properties pertaining to biological actions.

Scheme	Domain Track
Duration	6 months
Occupations	Pharmaceutical chemistry
Entry Qualification	Pharmacy and Allied Health/Applied Science/Dairy Tech/Fisheries/biological sciences/Agriculture
Minimum Age	16 Years

Progression Pathways:

- Pharmaceutical industries (R&D, F&D and Analytical)
- Regulatory affairs (Quality control and Quality assurance)
- Sales and marketing
- Patent attorney
- Pharmacovigilance
- Biomedical researcher

Expert Participation:

Dr. Asish Kanhar

HCCU2380 HEALTH CARE ASSISTANCY

Course Description:

Health Care Assistancy Domain offers understanding of Clinical outcomes, financial effect, and a variety of functional indicators, such as patients' stated quality of life and happiness, hospital management and health related policies. The information acquired might come from a variety of sources and approaches, such as patient questionnaires, insurance databases, and medical records. These studies can offer recommendations on routine hospital investigations, patient care, and hospital deliverables by examining a wider range of metrics.



Learning Outcomes:

- Students will be able to understand different serological, Hematological and biochemical investigation used in medical laboratory.
- Student can understand how to diagnosis different infectious diseases.
- Understand the impact of community-acquired and healthcare-associated infections.
- Understanding the designs to minimize the risk of occupational exposures to infectious diseases.
- The student will be able to understand the planning for establishment of Hospital.
- The student will learn the strategies of Marketing in Healthcare.
- The student will understand the trends in Health Insurance.

Scheme	Domain Track
Duration	6 months
Occupations	Pharmacy and Allied Health
Entry Qualification	Applied Science/ Pharmacy and Allied Health
Minimum Age	16 Years

Progression Pathways:

- Healthcare Administrator
- Digital Health Product Executives
- Medical Accountant
- Operations executives in integrated Health Information System
- Digital health educators
- Public Relation Officer in Health industry
- Higher studies and Research
- Self-employment through entrepreneurship

Expert Participation:

Dr. Sunil Kumar Jha
Dr. Soumya Jal

MSCU2390 MANUFACTURING EXECUTION SYSTEM

Course Description:

The domain is designed to impart skill and hands-on knowledge to students for knowing how the manufacturing Execution System (MES) system can be integrated to monitor all the production processes. The students are exposed to different methods for collecting real-time data from different sensors, incorporated in the production line for scheduling, operator & resource management, process management, and performance analysis. Here students will be able to learn interfaces between hardware and software through a wireless or wired medium and are connected using the Internet of Things for production line tracking. The MES can connect to any systems in the Cloud and visualization of all the process is done through Dashboard. It enables students to form a network of intelligent devices connected to form systems that monitor, collect, exchange and analyse data through the cloud platform.



Scheme	Domain Track
Duration	Six months
Occupations	Embedded System Engineer
Entry Qualification	B. Tech
Minimum Age	16 Years

Learning Outcomes:

- Students will be able to demonstrate the Manufacturing Execution System.
- Students can interface multiple IoT devices incorporated in the production process and send information wirelessly to the Cloud.
- Students will learn the different programming languages, platforms, and associated tools.

Progression Pathways:

- Develop Real-Time Industrial IoT-based Production Line Tracking for Garment, Manufacturing, and Mining Industries.
- Working on Embedded Controllers, Sensors, JavaScript, Web Development & Database Languages, and Visualization Tools.

Industry Participation:

Dassault Systemes, Bangalore

Expert Participation:

Ms. Swarna Prabha Jena
Mr. Arun Manohar

RHCU2410 RETAIL AND HOSPITALITY

Course Description:

Retail and Hospitality Management is a skill-based industry integrated domain course. It is delivered in a unique experiential learning process of interactive hands-on sessions, beginning with essential theoretical foundations, and progressing to learning how to effectively apply them in the real world. It is primarily focused on the management of Quick service restaurants (QSR).



Learning Outcomes:

- Control day to day operations by scheduling labor, ordering food & supplies and developing the team.
- State the roles and responsibility of QSR Managers.
- Identify the customer needs and sell the products in the QSR outlet environment.
- Resolve customer issues and enhance customer satisfaction level.
- Maintain the merchandise in a store.
- Run an outlet independently of any formats.
- Ensure statutory compliance by maintaining registers and licenses.
- Control P&L by following cash/control security procedures, maintaining inventory.
- Reviewing financial reports and taking appropriate actions.
- Ensure food and beverage quality and customer satisfaction.
- Help you to become an entrepreneur.

Scheme	Domain Track
Duration	6 months
Occupations	Retail and Marketing
Entry Qualification	Management/B.Tech/Applied Science
Minimum Age	16 Years

Progression Pathways:

- Higher studies and Research
- Self-employment through entrepreneurship
- Join as café manager and manage the coffee shop

Expert Participation:

Mr. Mihir Ray
Dr. Sabyasachi Dey



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Balangir Campus
Behind BSNL office IDCO land

Rayagada Campus
IDCO Industrial Area