Syllabus for Bachelor in Design Specialization in Ceramic & Glass Silpa-Sadana, (PSV) Visva-Bharati, Sriniketan

"To nurture the potential using our enormous talent and resources and to make this potential a marketable invention which, can raise the standards of the entire Ceramic, Glass and Lifestyle product industry & Craft Sector for the Indian as well as international market. The primary focus is on understanding the needs of the people who are going to use the products"

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India has a huge potential in ceramic and glass ranging from craft sector to studio workshops, Micro and small to mass-produce large sector industry in the field of Ceramics and Glass. Every sector has its own distinctive issues to deal with in its own exceptional way and approach. The Ceramic & Glass designer must be able to work with materials and tools of each of these industries with equal effortlessness. The designer must also have the ability to design a diverse range of products and product systems for these sectors. In doing so the student should keep in mind mainly the needs of the people who are going to use the products and the industries producing them.

A graduate of Ceramic & Glass design is equipped to address to the design requirements of Ceramic and Glass related lifestyle product industries. There are also ample of opportunities to work in the craft and NGO sectors, as well as to become entrepreneurs with independent batch production studios. Graduates also tend to work as a bridge between industrial manufacturers, craft agencies, NGO, architects, design studios, life style stores and sometimes directly address to the consumer.

Ceramic

India has nearly one million potters, more than any other country on earth; clay techniques have been handed down for generations. Craft pottery has been a part of the fabric of India for thousands of years; even today it is used for domestic ware and votive pieces as well as architecture. Craft pottery continues to be an intrinsic part of everyday life even today. We cannot deny the importance of craft sector for the sustainability of our economy as we all know that in India the crafts sector is an important in employment generation. The commercial purpose of crafts in modern markets is showing immense potential as craft and craft based industries are turning out to be India's highest export earners.

At the same time studio pottery movement in India has given birth to a lot of potters working in various aspects of clay. A popular path to studio pottery is functional ceramics. Contemporary studio potters work in earthenware, stoneware, and porcelain, building by hand or working on the potter's wheel, firing in wood, gas, oil and electric kilns.

On the other hand with an abundance of natural raw materials, technical skills, and infrastructure facilities the industrial ceramics is also coming of age in India. With globalization in place and having a footing on technologies India has started its activity for global presence.

Glass

You can see through it, drink from it, make bottles from it or play marbles with it. Glass is a man-made substance, which has been employed for nearly 3,500 years to create a wide range of objects for both domestic and industrial purposes.

Indian glass industry caters to the daily needs of the consumer responsible for making of a vast range of articles such as beverage ware, dining table articles, bottles, stylish beads, bangles, paperweights, different glass decorative articles etc., thus the

present day glass making small-scale industry in India revolves around items like, bottles, bangles, beads etc. The material offers tremendous creative as well as functional possibilities in the domain of life style products and giftware articles; there is a visible dearth of indigenously designed and developed good quality glass products.

Course Structure

The student enters the Ceramic Design discipline after a 4 semester foundation program. The next 3 semesters are arranged to enable students to acquire the skills in ceramic & Glass design. They are introduced to Ceramic & Glass materials and processes through theory courses and workshop practice. These include Ceramic & Glass technology and knowledge of various types of raw materials, glazes, bodies, colors and production processes. They learn modeling and mould-making methods and finally prototype building and testing. Through various exercises they acquire a sensitive understanding of form and color.

Further they undertake design projects where they gain experience in the problem-solving process and apply their acquired skills and knowledge to various project-based situations. During this period the student is also exposed to professional situations through the design unit where the student would acquire professional attitudes and skills. In addition to this the student is required to work in the ceramic in the ceramic industry in order to understand the problem of the industrial situation and to learn to cope with them.

In 5^{th} semester is expected to give students an overall understanding towards the ceramic as a material and its design aspects and constrain and the advantage area of specialization. Here the student would be provided with clarity towards design philosophy, ethics, process and skills. This semester helps in getting the students come in a common platform for further specialized inputs. Main focus of the 5^{th} semester is to equipped students work mainly with low temperature ceramic ware which use by micro or cottage industry. Terracotta is amongst the oldest and most widespread form of handicrafts. Historical records of prehistoric era have been found in the remains of pottery. The raw material for this craft is ordinary clay, derived from the beds of water bodies like river, lakes and ponds. The terracotta products are graded according to their color, strength and water absorption capacity. Terracotta, a functional medium, is the first creative expression of civilization. From the common earthen pot that stores drinking water to Student can explore the possibility according to the modern lifestyle.

6^{th} Semester is to demonstrate the understanding acquired towards design methodology through the project. Inputs relating to evolving different high temperature clay bodies vitreous or semi-vitreous ceramic ware made primarily from non-refractory fire clay and glazes, their chemistry and physical requirements are established. High temperature products are designed with considerable input from technology to customers about what they expectation in modern environment. High temperature ceramic ware solutions are open and flexible, supporting to all kind of uses. High temperature ceramic ware products are designed to benefit to modern lifestyle. Advantage of fired at a high temperature to form hard ceramic ware that can be used in cooking. The material is heavier and darker than terra-cotta cookware. The unique combination of a nonporous surface and the ability to withstand high

temperatures makes stoneware baking pans or other kitchen products ideal for cooking and serving or use as an architect or building material. In this semester and introduction processes in the kiln forming to glass would be covered. Some courses will develop the understanding about innovating complex functional ware and its form development.

In 7th Semester students would be develop the understanding towards complicity of design methodology through the project. Inputs relating to evolving industrial production process, their physical requirements and introduction towards costing managing the production line. In this semester and introduction processes in the kiln casting glass would be covered. Few more courses featuring, relationships of functional and esthetic aspects are also looked into to enhance design skills

8th semester is the last Semester of the B.Des course. During this Semester the student will focus or on self study and equipped them for forth coming real life challenges. In the last semester student is exposed to professional situations through the design unit/ industrial setup where the student would acquire professional attitudes and skills. In addition to this the student is required to work for the ceramic or ceramic craft in the ceramic industry/ or a craft sector it's like a real life situation in order to understand the design problem of the industries/craft sector and to learn to handle with them. This semester a student undertakes a major project based on the general guidelines set by the project faculty or guide. Which is prepares by student to become an emerging designers to choose their area of interest to fulfill their professional interest. This semester will give more emphasis towards to develop an individual as a designer and responsibility towards the society and analytical approach to solve the problem areas. In this semester one should give more emphasis to self-study and a self dissension maker about their own project this will help them to become an entrepreneur and self critical and develop analytical thoughts.

Semester V

Subject Code	Subject Name	Credit
CG-V/01	History of Design*	2
CG-V/02	Materials & Processes – I (Terracotta, Earthenware,Raku etc)	4
CG-V/03	Material & Product Technology-I	4
CG-V/04	Workshop Practice– I	6
CG-V/05	Product Design– I	6
CG-V/06	Ergonomics**	2
Total Credits		**24**

Semester VI

Subject Code	Subject Name	Credit
CG-VI/01	History of Pottery-Ceramics	2
CG-VI/02	Materials & Processes – II (Stoneware, Porcelain Bone China & Glass etc)	4
CG-VI/03	Material & Product Technology-II	4
CG-VI/04	Workshop Practice– II	6
CG-VI/05	Product Design– II	6
CG-VI/06	Computer aided Design & Drawing**	2
Total Credits		**24**

Semester VII

Subject Code	Subject Name	Credit
CG-VII/01	Quality Assurance, Accountancy & Costing*	2
CG-VII/02	Materials & Processes – III (Industrial production)	4
CG-VII/03	Material & Product Technology-III	4
CG-VII/04	Workshop Practice– III	6
CG-VII/05	Product Design– III	6
CG-VII/06	Finishing Materials & Techniques (Surface Decoration)	2
Total Credits		**24**

Semester VIII

Subject Code	Subject Name	Credit
CG-V/01	Entrepreneurship, Business Management & Marketing*	2
CG-V/02	Craft documentation*	4
CG-V/03	Professional Exposure*	2
CG-V/04	Elective Paper (any one): - (Inter-disciplinary product(s)	4
CG-V/05	Preparatory Project Work	2
CG-V/05	Major Project	10
Total Credits		**24**

***Courses are common for all discipline

****Courses are common with Furniture & Interior Design Discipline

Semester - V

[CG-V/01]-History of Design* Credit: 2

Relevance:
History is the prerequisite of deeper of understanding of a discipline and making opening up one's vision. It is also study of the past heritage for deciding and establishing future direction of the discipline. It also draws upon most elements of human past experience and synthesizes gainful knowledge.
With the help of this study we learn about our historical past, share history the transitional ideas and events that have created the present societies and cultures. It's also helps to widen our conceptual understanding within historical framework amongst which one can develop an understanding of issues.

Course objective: On satisfactory completion of the course, the students will have a comprehensive understanding on the world history of design on different Design related fields since classical period. They shall also go through different school of thought in contemporary design since Industrial Revolution till the beginning of 21st century including design in India.

Course content:

- **Design & Environment:**
- **Classical Style of the West:**

i. Egyptian Style – Belief in life after death – Abundant labour leading to monumental scale – Design Study.
ii. Classical European Style – Greek – Abundance of high quality limestone & marble – Scarcity of hardwood – Human scale – Extrovert space – Orders: Doric, Ionic, Corinthian – Study.
iii. Roman – Introduction of different quality of stone, Fired bricks, improved mortar, stucco & marble veneering; Knowledge of arch, barrel vaults etc leading to arcaded architecture, Grandeur & monumental scale – Introvert space – Orders added: Tuscan and Composite or Roman – Study.
iv. Gothic – Mystic interior – Pointed Arches & Vaults – Flying buttress etc.
v. Renaissance Style: Reformation movement – Revival of classical learning resulting in symbolism, plain forms with uncluttered interiors – Increasing refinement – Baroque movement – Freedom of detail.

- **Classical Style of the East & Far East:** i) Buddhist Style ii) Japanese Style, iii) Chinese Style, iv) Hindu Style, v) Islamic Style – Indo-sarasanic style.
- **Industrial revolution era;**
  i. Industrial revolution: Impact; New social outlook; Victorian attitude; New need, new material and new methods of production.
  ii. Art & Craft movement that took place in England in late 19th century for reviving handicrafts and reforming architecture by using traditional building crafts & local materials.

iii. Art Nouveau: Decorative movement that took place in Europe - Flowing & sinuous naturalistic ornaments – Avoidance of historical traits - Study of the style.

- **Modern Movement:**
  i. Chicago School - Form follows function.
  ii. Prairie School: Organic Style – Frank Lloyd Right - Local material & local characteristics – Technology in the service of humanity - Modern style with a human face – Study.
  iii. Bauhaus School: Functionalist in approach leading to rational simplicity – Anti-ornament ethics: absolute plainness of blocks – Study.
  iv. International Style: Coined by Philip Johnson in 1932; Global uniformity – Standardization of elements and components – Asymmetrical compositions - Study.
- **Counter Movements to Modernism:**
  i. Expressionism – Tired of plain surfaces – Closure to sculpture.
  ii. ii) Art Deco: Decorative and Industrial Art in 1925 – Use of motifs from the past – Study.
  iii. Local heritage - Santiniketan Style (Art Deco)
  iv. Ulm
  Brutalism: Exposed concrete – Roughness – Over emphasis of chunky members.
  v. Tensile structure, Shell, Domes, Space frame etc.
- **Post Modernism:** Robert Venturi, Memphis – Ettore Sotsus – Less is Bore – Attacks modernist orthodoxy to come in terms with popular culture – Study.

Methodology:

- Class room lecture
- Audio-Visual presentation
- Library studies
- Interactive sessions

Evaluation Criterion:

- Interest & understanding ability,
- Punctuality, attendance & Attentiveness,
- Continuous Internal assessment.

[CG-V/02]-Materials & Processes – I (Terracotta, Earthenware, Raku etc) Credit: 4

Relevance:

Being a material specific discipline this course module would provide basic understanding of the concerned material and related processes. Strengthen understanding about Material, understanding which helpful to analyze raw materials and its use in appropriate way, better use of available resources, and

detail study of how to make better quality material. Develop understanding coloring elements (basic understanding of coloring oxides) Introducing different terracotta firing and basic glazing (Glass & Borax) techniques, there effects and possibility of firing.

Course objective:

Objective of this course is to develop First-hand practical knowledge and explore their possibilities in making objects by low temperature Clay bodies. The inputs will consist of direct exposure to inherent qualities of materials including its working properties. Students should be acquainted with skills by using of different hand-builds forming techniques of. Students learn throwing, finishing and hand forming alteration techniques in Low temperature clay.

Course content:

- To learn how to prepare Low temperature clay bodies by available materials
- To learn the methods of throwing on potter's wheel
- To learn the various methods of forming such as coiling, slab & slab casting, throwing and other hand build technique etc.
- To learn how to prepare clay & plaster for different prepuces
- Acquire skills in plaster to build up 3-dimensional forms (at least a cube, cylinder, sphere and cone.).
- To learn casting slab casting in plaster mold
- To explore various treatment on clay
- Different low temperature firing techniques.

Methodology:

Lectures and practical demonstrations visit to appropriate industry Film/Video
A team of faculty will take lectures on various topics self study and presentation of notes.
Note: *Input will not involve any workshop practice exercise by the students.*

Materials, tools and facilities:

Conmen and other Clay according to the requirements of low temperature bodies , Throwing wheels, Roller pin, Wooden Stripe, Cloths or canvas, coloring oxide, covering sheet, bending wheels, etc

Evaluation Criterion:

- Learning Ability (observation and application of material in appropriate manner)
- Material exploration (Analyses the process and explore. Logical thinking and adaption, knowledge acquired & implementation)
- General Attitude (attendance, punctuality. Involvement. Sincerity and timely submission of class assignments and attentiveness)

[CG-V/03]- Material & Product Technology-I **Credit: 4**

Relevance:

The aim of the course is to learn the basic principles and functions of ceramic machinery, materials and firing techniques. To develop the understanding of various types of ceramic bodies & different type of ceramic products and there production processes.

Course objective:

The course is introduces students to the fundamentals of most commonly used ceramic materials, and ceramic chemistry and material behavior under different thermal conditions. This course also sensitizes towards basic chemistry of raw materials and processes, Basic understanding of coloring oxides, which are use in terracotta or low temperature making and decoration, it will offer more dimensions to their work. They will be introducing to the basic glazing (Glass & borax base). They are familiarized with the batch and mass production processes used in manufacturing of different kind of terracotta products. Students should experimentation for different type of terracotta bodies for different function. Experimentation for porosity, shrinkage and other properties of clay bodies

Course content:

- Prepare and testing Low temperature clay bodies by available materials.
- To explore various treatment on clay by different firing technique
- To learn about principle Ceramic Raw materials
- To understand Heat effect on raw materials
- To learn about loss of ignition, porosity and shrinkage of ceramic materials and mixtures.
- To understand & experiment with raw material to be used for clay body preparation.

Methodology:

Lectures, assignments supported by practical work and continuous evaluation.

Materials, tools and facilities:

Clay, Raw materials such as Quartz, Silica, Oxides, Talc etc. which constitute clay bodies, Weighing machine, heater, container to heat water, Kilns etc

Evaluation Criterion:

- Cognitive Skills: Knowledge & Comprehension, Analysis & Synthesis, Perception, Application
- General Attitudes: Motivation, Commitment, Punctuality, Interaction, Attentiveness

[CG-V/04]-Workshop Practice-I (Terracotta, Earthenware, Raku etc) Credit:6

Relevance:

As a continuation to the previous module this semester course Ceramic Technology – I and Materials & Processes – I gives an insight towards important. Form manipulation and refinement 2D and 3D. This is an advanced sensitization to form integration and manipulation. Develop competence in evaluating form, developing and manipulation of concepts and realizing these in aesthetically superior forms. Delta issues related to product form through their meaning, expression and relation. The evolution of a physical form may be seen in terms of visual perception, the overall character, and the surfaces to highlights through colors and textures. This course introduces students to complex forming techniques of clay. After finishing their fundamentals in workshop Practice– I, they are expected to exploit their skills to much more complexity, in terms of form, technique and also skills.

Course objective:

This course introduces to fundamentals of design in second and third dimension while working with material, understanding the principles of composition, form generation using visual elements and to refine perceptual and aesthetic sensibility. Inputs include the laws of form perception and organization. This will enable to understand and apply some basic principles of form generation and to verbally articulate form ideas. This involves working with planes and solids, exploring the third dimension of space through geometric relations, form and radii manipulation, integration, textures and the notion of positive and negative forms. Skill of throwing to be developed for terracotta bodies as well. Products complex in form & function, should be attempted. To understand how to evolve of different form from 2D to 3D and form emerges one face to other. This course will develop understanding towards the aesthetic of form and their uses. This course will develop understand and uses different types of Glazes, Engobe & colored slips in appropriate scheme. Workshop skills will develop their understanding towards fundamentals of form as well as their skill development.

Course content:

The assignments in form manipulation and analysis would sensitive towards perception, appreciation and articulation of form ideas. This would provide some fundamental tools to creatively influence and generate a form to a desirable expression. In the main assignment the students will be trying to study the effect of saturation and how product forms adapt themselves to let various forms of medium to penetrate through them. The expression will work as the guiding factors to evolve the nature of the flow of the medium; the forms could be either enclosed positive or both.

Methodology:

Different kinds of assignment will give to develop understanding towards form and functionality.

Materials, tools and facilities:

Clay, Plaster, Wooden tools to work on clay, Plaster working tools, Potter's Wheel, Workshop tables for clay work, Kilns for firing etc.

Evaluation Criterion:

- Cognitive Skills: Communication through material, Perception, Application
- Studio Skills: Sensitivity, Dexterity, Proficiency, Precision, handling Tools/Material/Medium
- Design & Creativity: Imagination, Form innovation
- General Attitudes: Motivation, Commitment, Punctuality, Interaction, Attentiveness

[CG-V/05]- Product Design– I (Terracotta Product) Credit: 6

Relevance:

Terracotta products are part of Indian culture & craft tradition technique. Students are encouraged to develop sensitivity towards material & technique, in order to design functional products for everyday use in the contemporary context. The project aims to create an understanding of relationship of a product with user at elementary level. Minimum involvement operation and production technique is the key requirement of this project. The functional aspects of the inherent characteristics of the material are to be looked into. Inputs in Design process, Material Science, Production processes and technical skill etc. is nurture appropriately .

Course objective:

This project lays emphasis on form, detailing and finishing. The objective of the course is to realize the learning of Design process. Also to reflect the understanding of Material science, Production process, ergonomic inputs to solve design problem, keeping in mind needs of the user. This project provides a platform to understand the relationship of a product with potters and users at various level of complexity. Student would also get acquainted to work under constraints where minimum involvement of complexity of machines is required, to develop product for better functioning and achieve over all form with aesthetic appeal. Student is expected to understand principles of machines, kilns and property of material and also to relate the product to the user by way of achieving better function of the product through detailing and refinement through finishes.

Course content:

1. Define a problem statement.
2. To understand and analyze available information
3. To study the material characteristic and processes at a particular form of the detailing
4. To study the study the principles to achieve better function
5. Study existing product and analyze the function of the product/component in relation with either whole product or component functions
6. Develop concept keeping user's need in view
7. Developing alternative solutions
8. Develop appropriate technique to reproduction a number of identical produce.
9. Presentation through sketches, illustrations, drawing
10. To make prototype with design drawing
11. To realize products with market situation

Methodology:

- Through Lectures, interactive discussions, group discussions, user study, market research, presentation in different forms(sketch, drawing, illustrations PPT etc)
- Compilation of project in the form of documentation/report

Evaluation Criterion:

- Analysis & Synthesis,
- Studio Skills:
- Creativity: Imagination, Form. Innovative & Articulation capability
- General Attitudes:
- visualization capability

[CG-V/06]-Ergonomics **Credit: 2**

Relevance:

Ergonomics is the scientific discipline concerned with the interactions between the different components of man-machine-environment system. Derived from the Greek ergon (work) and nomos (laws) to denote the science of work, ergonomics is a systems-oriented discipline, which now applies to all aspects of human activity**.** Ergonomics use information about people – their height, weight, ability to handle information and make decisions, ability to see and hear and also their ability to work in extremes of temperatures, to make the work as well as the workplace safer, more comfortable, and more productive.

Course objective:

It is a multidisciplinary subject and the different disciplines which form the basic frame work of ergonomics include - work physiology, work psychology, some aspects of anatomy and physical anthropology, engineering sciences, biotechnology, biomechanics and biostatistics.

An understanding of human factors is fundamental to the design of user-sensitive products and systems. Pragmatic skills of application of ergonomics in the design process to be developed through class room assignments based on real-life situations.

Ergonomics has the great potentialities in the utilisation of valuable human resources and in designing better tools, machines, equipment, workspace, work methods, working conditions, etc to improve efficiency, productivity, safety and occupational health of the users.

The course aims at familiarizing the students with the basic concepts in ergonomics and its application in design processes.

Course content:

Introduction to Ergonomics: definition, aims, application, etc

- Anthropometry: static and dynamic, percentile value and its application
- Physiology and Work Physiology
- Posture
- Effect of Environment on Work Performance
- Psychological Issues
- Occupational Health and Safety
- Accident analysis, Prevention and Injury Control
- Information Processing
- Application in Design Process
- Methodology in Ergonomics

Methodology:

The course content mention above will be dealt with by way of giving theoretical as well as practical inputs to the students. This will comprise lectures, discussions on case studies, distribution of handouts in required areas, etc.

The course will be imparted through some crash assignments on small projects. The students will have to evaluate the given problem area from the viewpoints of ergonomics, assess it and give ergonomic recommendations.

They will have to follow the ergonomic research methodology and presentation procedure in their project documents.

Assignment

Students have to select one daily-use object or any hand held product, evaluate it from viewpoint of ergonomics highlighting problem areas and recommend to solve those problems.

- First Presentation on 'Identification of Ergonomic Issues' by using charts, drawings, photographs, write up, etc.
- Second Presentation on "Recommendations to solve the identified problems" by using charts, drawings, write up and model (if possible).
- Modify charts, drawings, write up, etc., according to the feedback received from the teacher(s) and submit final document.

Semester - VI

[CG-VI/01]-History of Pottery-Ceramics Credit: 2

Relevance:

History is the practice of understanding and making meaning of the past. It is also the study of the problems of establishing and representing that meaning. It is a synthesizing to the discipline students and draws upon most elements of knowledge and human experience. Students learn about their historical past, their collective history and the people, ideas and events that have created present societies and cultures.

Course objective:

This study builds a conceptual and historical framework within which students can develop an understanding of the issues of their own time and place. It seeks to extend students' cultural, economic, social and political understanding while developing analytical skills and using imagination.

The study of history draws links between contemporary society and its history, in terms of its social and political institutions, and language. An understanding of the link between accounts of the past, and the values and interests of the time in which the accounts were produced, is also a feature of the study of history**.**

History is relevant to students with a wide range of expectations, including those who wish to pursue formal study at tertiary level, as well as providing valuable knowledge and skills for an understanding of the underpinnings of contemporary society.

Course content:

The study is made up of six units. Each unit deals with specific content (Prehistoric, Early Civilizations, Middle East, European, Chinese and Far Eastern & Indian Ceramic & Glass) and is designed to enable students to achieve a set of outcomes. Each outcome is described in terms of key knowledge and knowhow of different skills. This study is designed to enable students to:

- Develop an understanding of changes, continuity, causation and evidence;
- Acquire a knowledge of how people in different times and cultures have interacted and organised
- Their past societies and evolve the art, design and since of ceramic and given meaning to their worlds;
- Develop the knowledge, concepts and skills to analyse the ways in which the ceramic, pottery & glass past has been
- Represented visually, orally and in written form;
- Develop ability in responding to historical evidence creatively and critically to make meaning of the past;
- Acquire a broad historical knowledge, including an historical map within which different stage and type of ceramic & glass to locate their detailed studies**.**

Methodology:

Lectures, Audio Video presentation, assignments for data collection, and self study

Materials, tools and facilities:

Class room with white board & Audio Video presentation facilities

[CG-VI/02]-Materials & Processes-II (Stoneware, Porcelain, Bone China & Glass etc) Credit: 4

Relevance:

It will provide insights into the various possibilities and limitations of the high temperature ceramic like Stoneware, Porcelain, Bone China and an introduction of Glass as a material. This understanding will reflect on the concepts while one is visualizing and conceptualizing the products.

There has been a remarkable resurgence of interest in Glass internationally and much of the development is largely due to the educational institutions developing skills, material knowledge and design studies in Glass.

Course objective:

The course deals with understanding of characteristics of the material and also how the material forms in a particular design construction. The objective of this course is to introduce advance levels of skills and technology related to the Stoneware, Porcelain, Bone China and Glass as materials. Along with the advance throwing skills students are also introduce various possibilities of decoration techniques in this material.

Plaster is one of the most important materials other than clay in ceramic industry. It is primarily used for production purpose. To understand its character, skills and its position in the production processes for ceramic material.

Introduce Glass as material and its potential use in the artistic and Functional contexts. Student is expected to learn and develop skills and techniques to accomplish the basic of Kiln Form Glass.

Course content:

In this course students will introduce various possibilities of shape making and uses of high temperature bodies different and decoration techniques.

This course introduces plaster as a material for production processes, using hand tools and turning wheels. It introduces plaster modeling and mould making to them. They get into the processes of mould making and it being used for casting and jollying methods, reproduction of moulds and profiles for jollying. In the process they are expected to make a prototype of a complex object such as kettle.

- To learn about characteristic of Ceramic Raw materials
- To understand Heat effect on raw materials
- To learn and understand of production processes for tableware, sanitary ware and pressed ware.

- To understand & experiment with raw material to be used for clay body preparation.
- Mainly Students will work on the area of Kiln Formed Glass (Fusing, Slumping, Casting, and Pat de Verre) and uses Glass in Architectural Structure.

Methodology:

Lectures and practical demonstrations visit to appropriate industry Film/Video
A team of faculty will take lectures on various topics self study and presentation of notes.

Materials, tools and facilities:

Clay, Raw materials such as Quartz, Silica, Oxides, Talc etc. which constitute clay bodies as well as Glaze bodies, Wooden tools to work on clay, Potter's Wheel, Glaze grinding machine, Weighing machine, Workshop tables for clay work, Kilns etc. Glass, Tools used for glass cutting and other purposes, coloring oxides, Plaster moulds, clay moulds, Kiln etc

Evaluation Criterion:

- Learning Ability (observation and application of material in appropriate manner)
- Material exploration (Analyses the process and explore. Logical thinking and adaption, knowledge acquired & implementation)
- General Attitude (attendance, punctuality. Involvement. Sincerity and timely submission of class assignments and attentiveness)

[CG-VI/03]- Material & Product Technology-II Credit: 4

Relevance:

Being material specific discipline this course would provide basic understanding of the concerned material Stoneware, Porcelain Bone China etc and related processes. It will also provide insights into the various possibilities and limitations of the material. This understanding will reflect on the concepts while one is visualizing and conceptualizing the products. This course introduces the chemistry and behavior and heat effect of basic ceramic materials such as Ball clay, China clay, quart, Feldspar etc. It is also study and behavior of different types of ceramic bodies such as stoneware, porcelain and bone china etc.

Course objective:

The aim of the course is to learn the basic principles and functions of ceramic machinery and firing technique. To develop various types of High Temperature Ceramic bodies for different type of ceramic products

Course content:

Ceramic Part –A)

- To learn about fundamentals to develop various type of high temperature ceramic bodies
- To understand and develop porcelain bodies.

- To learn and develop Bone China bodies
- To understand production process for Bone Chinaware
- To learn about firing technique for porcelain and Bone Chinaware
- To know about various types of furnaces used in ceramic industries
- To understand about various types of fuels
- To understand and develop stoneware Porcelain Bone China bodies for different products
- To learn about loss of ignition, porosity and shrinkage of ceramic materials and mixtures.
- To know about basic principles of high temperature firing for different type of kilns
- Experimentation for stoneware Porcelain Bone China bodies
- Experimentation for porosity, shrinkage and other properties of stoneware Porcelain Bone China bodies
- They get into the processes of mould making and it being used for casting and jollying methods.

Glass (Part –B)

- Know the basic understanding of glass and glass raw materials
- Different firing temperature of kiln form glass
- Introduction to Glass
- Composition of some important Glass
- Raw materials used in Glass making

Methodology:

Lectures, Demonstration, Slide shows, Practical Assignment, Books, Field visit

Materials, tools and facilities:

Different type of glass Clay, Raw materials such as Quartz, Silica, Oxides, Talc etc. which constitute clay bodies, Weighing machine, heater, container to heat water, Kilns etc

Evaluation Criterion:

- Cognitive Skills: Knowledge & Comprehension, Analysis & Synthesis, Perception, Application
- General Attitudes: Motivation, Commitment, Punctuality, Interaction, Attentiveness

[CG-VI/04]- Workshop Practice– II (Stoneware, Porcelain Bone China, Glass etc) Credit: 6

Relevance:

Being material specific discipline this course would provide basic understanding of the concerned material and related skills. It will also provide insights into the various possibilities and limitations of the material at forming aspect. This

understanding will reflect on the concepts while one is visualizing and conceptualizing the products.

Course objective:

As a continuation to the previous module this course gives an insight towards important issues related to product form through their meaning, expression and relation. The evolution of a physical form may be seen in terms of visual perception, the overall character, and the surfaces to edges to highlights through light, colors and textures. To acquire skill on clay, plaster and glass to realize basic concept in clay plaster and Glass to build up 3-dimensional products.

Course content:

The form transition exercises in the first module will be taken forward to the third dimension. The course begins with simple linear form transition between two basic shapes applying geometric relationship, form manipulation, radii manipulation further by integrating two or three shapes in the three dimensions within the constraints of one volume. The objectives of the exercises deal with understanding and applying attributes and character to a given form. All the exercises employ drawing and model making and are also meant to enhance the visualization and representation skills.

The assignments in form manipulation and analysis would sensitive towards perception, appreciation and articulation of form ideas. This would provide some fundamental tools to creatively influence and generate a form to a desirable expression. In the main assignment the students will be trying to study the effect of penetration and how product forms adapt themselves to let various forms of medium to penetrate through them. The expression will work as the guiding factors to evolve the nature of the flow of the medium; the forms could be either enclosed positive or both. This course introduces students to complex forming techniques of wheel plaster and other shape making processes. After finishing their fundamentals in workshop , they are expected to exploit their skills to much more complexity, in terms of form, technique and also skills.

- Form exploration in the context of products. Expressions in form like soft, hard, warm, cold, precise, gross, delicate, strong, fragile, rugged etc.
- Study of product expressions by analyzing in terms of Elements like form, proportion, colour, texture etc.
- Introduction to abstraction in form. Study of 3D Abstraction in art and sculpture. Exploration of industrial Material and processes as elements of design through 3D Abstraction of entities in Nature.
- Students will explore the range (Family) of forms and their relations and interaction.

Methodology:

Different kinds of assignment will give to develop understanding towards more complex form & form transaction, functionality and their relation with form.

Materials, tools and facilities:

Clay, Plaster, Wooden tools to work on clay, Plaster working tools, Potter's Wheel, Workshop tables for clay work, Kilns for firing etc.

Evaluation Criterion:

- Cognitive Skills: Communication through material, Perception, Application
- Studio Skills: Sensitivity, Dexterity, Proficiency, Precision, handling Tools/Material/Medium
- Design & Creativity: Imagination, Form innovation
- General Attitudes: Motivation, Commitment, Punctuality, Interaction, Attentiveness

[CG-VI/05]-Product Design-II (Technique and Aesthetically Complex Project) Credit: 6

Relevance:

Complexity level of the project will be at all the levels i.e. material, processes, users need, functional and operational aspects, marketing. Interaction of overall form, Structure, junction and ergonomically relationship with the user are main considerations. This project demonstrates problem solving using specific design process and its application.

Students should use inputs of design process, Input in Material & Possess, Ceramic Technology, Workshop Practice Technical specific of materials and inputs from ergonomics etc. The level of inputs should match with the nature of complexity of the project.

Course objective:

Through this project, the student will experience a typical problem solving process by selecting an individual object in hollow and/or flatware. Here the emphasis will be on industrial mass production. This will provide the student an opportunity in practicing skills and knowledge already acquired. Presentation will be in the form of hollow models in plaster and prototypes in actual materials using production processes supported by production drawings renderings and documentation.

Application of learning skills and application of science to the project work are considerations. Work on specific areas of specialization with the application of basic, design skills, and methodology are main concern. To know more about specialization by proper selection of project for repetitive production processes. Also student needs to demonstrate performance on a problem solving process through providing creative alternatives

This project demonstrates problem solving using specific design process and its application. It also provides a platform to the students to understand and to deal with complexity at all the levels i.e. material, process, users need, functional and operational aspects and marketing. Interaction of overall form, Structure, junction and ergonomic relationship with the user is predominant considerations

Course content:

Defining the specific area and selection of a product or products in the same area Collect the relevant information on product/area i.e. functional aspect, structure, material form and ergonomic relationship. Collect information on similar projects, which exist and historical information on similar products those designed in the past. Analyze the information to arrive at a synthesis and redefine the problem areas and develop a problem statement laying down constraints.

Evolve alternative concepts and derive solutions. Visualize the concept through sketches, illustrations, drawings and prototype. Test the solution in real material and get user's/ market feedback. Compile the project work in the form of Prototype/Mockup model and proper document of each phase with all process and metaphors.

Methodology:

- Through lectures
- Through group discussion along with the class and faculties
- Discussion with users and manufactures
- Analyze the data and discuss the analysis with teacher, incorporate feedback.
- Develop the concept and derive solutions.
- Visualize concept through Sketches, Illustration, Drawings and Mockup Model/Prototype.
- Presentation of project work on each Phase according to design process to teacher and group
- Compilation of project in the form of documentation/report (Minimum 50-75 Pages)

Evaluation Criterion:

- Cognitive Skills: Comprehension, Communication, Conceptual Exploration, Problem-solving
- Studio Skills: Sensitivity, Internalization of skills, Skills Exploration, Dexterity
- Design & Creativity: Originality & Innovation, Imagination, Visualization, Form
- General Attitudes: Teamwork, Punctuality, Motivation, Cleanliness

[CG-VI/06]- Computer aided Design & Drawing Credit: 2**

Relevance:

New technology has had a profound effect on the three-dimensional design professions. Processes, such as rendering, prototyping, or basic stress analysis, can now be completed by an individual designer without the support of a variety of specialists. An experienced designer can now be informed on the implications of any design decision with greater speed. The optimization of the design process has clear advantages in an industrial and commercial context. Development time and costs can be reduced while retaining quality and reliability. Finite element analysis enables an accurate prediction of performance

prior to production. Prototypes can then be constructed by rapid prototyping or CNC machining in appropriate materials to allow performance testing.

Course objective:

To provide students with a practical experience and a theoretical understanding of a variety of three dimensional computers aided industrial design and digital media. Through this Course module students will know to appreciation of the ways in which these different media can assist effective, dynamic for design representation. To enable students to plan appropriate strategies to build effective digital models to represent design contexts. The 3D Design course is intended to offer students an introduction to the world of computer generated 3-D modeling. As an introductory course, it provides a basic understanding of the skills and techniques employed by 3-D designers in a wide range of applications.
Project based learning will enable you to gain an understanding of approaches to sustainable and eco-oriented design. Learn modelling skills evolve, this will learn about textures, rendering, lighting and settings, camera views, camera shots, optics and different media formats. You will gain a sound understanding of the various 3D object formats and output options necessary for different industry purposes.

Course content:

The module is designed to introduce students to three dimensional computer aided design and digital image manipulation. The intention is to provide students with knowledge, insight and skills in the use of digital tools and produce a creative and strategic approach to the effective application of this media within the design process.
It is intended to consolidate skills in design visualization and solid modelling. The course encourages a critical and evaluative approach to 3D modelling to be developed to allow students to select the most appropriate for the task at hand. Through set task(s) the students engage in a focused 3D CAD modelling exercise(s) that sees surface and solid modelling critically evaluated in terms of overall appropriateness in the replication of a given artefact. In this course students will explore basic mesh modeling, applying textures and materials to 3-D objects, lighting, and rendering. This course introduces you to 3D-modelling. It focuses on the basic elements of the 3D-modeling process and how to model complex 3D objects using industry standard software. At all times, students work in the context of the design and development of 3D products and such, in which both external form and internal components are designed and developed. In addition students will have developed enhanced presentation skills.
The module is a Computer lab based practical exercise using IT and multimedia resources for teaching, learning and assessment. The module consists of:

- Introduction to CAD principles.
- Introduction to and experience of appropriate three-dimensional software.
- Build complex 3D solid models any object.
- Understand top-down modular assembly design and large assembly management
- Utilize freeform surfacing to produce complex geometry parts

- Development of two-dimensional CAD software experience for presentation.
- Introduction to and experimentation of three-dimensional surface modelling software.
- Create sequences to fit in any format of computer modeling.
- Post Process 3D-CAD data and transfer it to 3D modeling format.
- Obtaining traditional orthographic projection drawings from 3D assembly and piece-part models.
- Organization of 3D methods. Model names, model splitting, layers and issue levels.
- Concentrating on the visually spectacular such as meshes and photo-realistic renderings.

Methodology:

An explanatory introduction to techniques with demonstrations in the computer lab is followed by 'hands-on' experience through supervised assignments. The intention is that students begin to plan and apply techniques as a fully integrated working practice within the design process.

Materials, tools and facilities:

- Handouts of course abstract and reading list.
- Classroom for 20 to 25 students with computer projection facilities, Overhead projector and White board.
- Set of selected software.
- Computer lab facilities –appropriate computer version
- 250 A4 size paper for laser prints of final student work.
- Laser writer cartridge from computer studio.

Evaluation Criterion:

- Cognitive Skills:
- Studio Skills:
- Design & Creativity:
- General Attitudes:

Semester- VII

[CG-VII/01]-Quality Assurance & Costing Credit: 2

Relevance:

Suitable Quality is determined by product users, clients or customers, not by society in general. It is not related to cost and adjectives or descriptors such "High" and "Poor" are not applicable. Quality, a source of competitive advantage, should remain a hallmark of Company products and services. High quality is not an added value; it is an essential basic requirement. Quality does not only relate solely to the end products and services

The terms 'costing' is many times used interchangeably. However, the scope of cost accounting is broader than that of costing. Following functional activities are included in the scope of cost accounting

Course objective:

Quality assurance is the process of using systems and methodologies that ensure that the manufactured products meet the required quality standards consistently. The aim of QA is to produce goods right at the first time, without any rework.

Product costing is the process of assigning costs to inventory and production based on the expenses that go into producing or buying inventory. It is an especially important process for manufacturers, and there are several potential costing methods that businesses choose for their simplicity, accuracy or other factors. If a business contracts out accounting services, the accounting firm may offer in-depth product costing analysis as part of its service. There are several benefits to such customized costing**.**

Course content:

- Definition of quality, Quality control, Quality assurance, TQM, Quality circle; Importance of quality control activities in an organization, Quality loop in an organization, Stages of quality control activities in an organization, Type of quality characteristics, Advantages & disadvantages of different quality characteristics. Statistical Process Control: Definition, Chance causes, Assignable causes, Difference between two causes.
- ISO - 9000 / Quality System » Introduction, Definition of ISO, Its development, Series of ISO - 9000 standards, Selection of standards, Classes of ISO - 9000 quality system, Benefits of ISO - 9000 quality system
- Chemical testing of ceramic raw materials; Testing of physical properties; Plasticity index, Atterberg number, water of plasticity; Dry behavior, dry shrinkage and Dry strength; Firing behavior and firing shrinkage; Testing of fired properties and fired wares; Mechanical strength; Abrasion resistance (hardness); Thermal shock resistance; Tests based on Indian Standard specifications; Working conditions simulating tests; Testing of clays; Raw China clay testing; Clay washing test.
- Estimation and costing; Costing principle, costing patterns for different process flows, worked out examples, Rudimentary knowledge about different tax systems, VAT, MODVAT, and basic concepts on trade licence, company laws, etc.

Methodology:

Lectures, Demonstration, Slide shows, Practical Assignment, Books, Field visit

[CG-VII/02]- Materials & Processes – III (Industrial production) Credit: 4

Relevance:

Properties and usage of different ceramic material in large scale production processes there has been a remarkable resurgence of interest in Glass internationally and much of the development is largely due to the educational institutions developing skills, material knowledge and design studies in Glass.

- Process of selection and appropriate applications for consumer products, design limitations and specific advantages of mass production processes.
- Assembly and Decorative techniques for ceramic product, manufacturing processes and assembly techniques.
- Concepts of structure and costing. Significance of form in structural strength of products, Influence of materials and processes on product aesthetics.
- Industrial finishes for ceramic & Glass.
- Properties and use of ceramics and glass, and their use at craft and industrial levels

Course objective:

This course introduces and develops skills in plaster workshop for prototype making. Thus it includes developing skills in plasterwork to make models and moulds for batch and mass production. Introduction to Porcelain and Bone China bodies & Ceramic Colors and Stains along with different firing techniques and kilns is imparted to the students. Students are also expected to explore complex throwing and building techniques.

The course expects the students to explore their skills further in clay and develop more understanding into applying Glazes and Colors. Exploring the possibility of throwing a set of ceramic ware, such as tea set or fruit bowl set etc.

Through this module students will develop understanding concept of reproduction and production process. To learn to make simple plaster model, moulds and case moulds for casting, jollying-jiggering & press moulds. They learn how to make use of these moulds in making final ceramic products. Once the final ceramic ware or a drawing of a product is selected for the production purpose, the student would require(keeping volume as reference) to get all its technical details ready, height, width etc. in orthography drawing format for reference.

Having the technical drawing ready, student should make the model and the mould of the product, in reference to the shrinkage values of the clay available. Thus the student would need to indulge in, to understand and develop mould for casting process, to understand and develop mould for jollying method, to understand the technique of mother mould for reproduction of moulds, to learn hollow modeling technique, to learn about profile making

Course content:

- To understand various types of glazes and their materials
- To learn and develop low temperature glazes
- To learn about metallic oxides and their mixtures for developing stains
- To understand production method for ceramic stains
- To develop ceramic stains for low temperature glazes
- To understand and learn about application of glazes.
- Students would also be imparted with skills related to Glass casting (Kiln) process.
- They are required to concentrate on Kiln casting process- along with a simple and complex mould product.
- They should also be introduced to various techniques of adding color to the glass while Kiln castings process the form.

Methodology:

Lectures and practical demonstrations visit to appropriate industry Film/Video
A team of faculty will take lectures on various topics self study and presentation of notes.

[CG-VII/03]- Material & Product Technology-III Credit: 4

Relevance:

Being material specific discipline this course would provide in-depth understanding of the concerned material and related mass production processes of Ceramic & Kiln form Glass Casting. It will also provide insights into the various possibilities and limitations of the material and there effects. This understanding will reflect on the concepts while one is visualizing and conceptualizing the products

Course objective:

The aim of the course is to learn the basic principles and functions of ceramic machinery and firing technique. Develop understanding towards various types of ceramic bodies for different type of ceramic products. This advance course will introduce Ceramic stains to the students along with porcelain and bone china bodies and their mass production process techniques. Exploration of ceramic stains and colouring oxide along with their application into body and different glazes like transparent, opaque and matt glaze. To explore the material to realize coherent nature(of plaster of paris) and how this material behavior is utilized in various ways and very aptly in ceramic field, making models and moulds for production purpose.

Explore possibilities in developing porcelain as well as bone china bodies. Know how about prepare raw and fritted glaze. Know how about glaze defects and their remedies.

Knowhow to the principles of kiln construction, Kiln construction and its principles would also be worked upon.

Course content:

Group A

- To know and learn about functions of various types of machines used in production processes.
- To know about basic principles of firing for different type of kilns
- To learn about Glaze Calculations
- To understand and develop high temperature glazes
- To understand about fritted glazes
- To learn about special glazes
- To develop ceramic stains by using metallic oxides
- To know about glaze and stain defects and their remedies

Group B

- To understand and develop different temperature and their effect on Glass Casting
- To develop Glass colouring by using glass stains and metallic oxides
- Process of Pat de Vera and Solid casting
- Mould preparation for glass casting

Methodology:

Lectures, Demonstration, Practical Assignment, Experimentation, Books, Field visit.

Evaluation Criterion:

- Cognitive Skills: Knowledge & Comprehension, Analysis & Synthesis, Perception, Application
- General Attitudes: Motivation, Commitment, Punctuality, Interaction, Attentiveness

[CG-VII/04]- Workshop Practice– III **Credit: 6**

Relevance:

The Product Designer's approach to design is one of holistic nature in designing her/his considers all the various aspects influencing design criteria. The being user's view point, and from manufacturing, ergonomics. production process Etc. one could get assistance in gathering this information through specialists in their respective area. But there is one area where he/she needs to contribute individually that is in form giving through which he would need to communicate. It is therefore necessary to study various aspects influencing form in respective material. These being from transition, differentiation and interaction between two forms are important.

Course objective:

The study of natural forms inculcates an understanding of form and function as integral phenomena. Students analyses a selected natural form in order to understand the interrelationships between structures, form and function in the

context of its specific natural environment. This understanding is further enhanced through the creation of a three-dimensional abstract form.

This course introduces and develops skills in plaster workshop for prototype making. Thus it includes developing skills in plasterwork to make models and moulds for batch production.

Glass

This course would introduce an intense skill development inputs in Glass Blowing and Cutting along with inputs in studio technology, Glass furnace Design etc. Decorating glass surface through the processes of Etching, Painting, Polishing, and Sandblasting is also explored in this course**.**

Course content:

- To analyze and understand factors controlling our perception of forms
- To understand the attributes of form
- To understand the relationships of form
- To understand the relationships between the elements which go into the making of a form.

Different kinds of assignment will give to develop understanding towards more complex form & form transaction, functionality and their relation with form.

Materials, tools and facilities:

Clay, Plaster, Wooden tools to work on clay, Plaster working tools, Potter's Wheel, Workshop tables for clay work, Kilns for firing etc.

Evaluation Criterion:

- Cognitive Skills: Communication through material, Perception, Application
- Studio Skills: Sensitivity, Dexterity, Proficiency, Precision, handling Tools/Material/Medium
- Design & Creativity: Imagination, Form innovation
- General Attitudes: Motivation, Commitment, Punctuality, Interaction, Attentiveness

[CG-VII/05]-Product Design– III **Credit: 6**

Relevance:

This project involves the application of the disciplined approach towards a design problem. Theme-based projects are undertaken, relating to either form-based system such as furniture and consumer products; function – based systems such as lighting or sanitation systems; public utility systems which can cover a wide range of problem areas. The emphasis is on the understanding of interrelating elements that make a coherent whole

This course is a design project in which emphasis is on 'arrangement approach'. This means that while designing, the inter-relationships are matter of consideration. The concept of modularity, part-interchangeability, family hood, replace ability etc would be part of this course.

The system project could be as direct as designing a set of table-ware or a group of inter-related furniture. While on the other hand there could be a project where the inter relationship are between product to environment and to the socio-cultural background.

Course objective:

This Project will help students to achieving either a single function or multiple functions which relates to form of a system. The project selection depends on chosen area of specialization. This may be consumer products from any sector form Indusial base to craft base. The complexity is more in the functional alternatives and inter-Relationship of product elements.

To understand behavior of a system as a whole

This help to develop understand the relationship criteria for a group of products and product elements in a system. This will develop understanding of modularity in elements and enable one to other form of product system.

Course content:

This project involves the application of the systems approach towards a design problem. Theme-based projects are undertaken, relating to either form-based system such as furniture and consumer products; function – based systems such as lighting or sanitation systems; public utility systems which can cover a wide range of problem areas. The emphasis is on the understanding of interrelating elements that make a coherent whole. This project is also an extension of the learning in the Decoration techniques. The relationship between surface decoration and needs of the market is explored in the design project

- To understand systems and the group synergy of a range of product and its criteria and its application
- To work out basic elements of products to form a system in the exacting ambiance
- To detail inter-relationship between product and its group details of form, elements and linkages of materials and processes.
- To prepare models prototype for better understanding of inter- relationship and its validity.
- To prepare supporting documents for better communication of a product system.

Methodology:

- A theoretical input on what constitutes a system and what are different types of 'Product System' and how system approach is practiced by designer.
- Through group discussion and feedback Discussion with user's and products
- Analyze the data, incorporate feedback and evolve concept.
- Evolve alternative solutions.
- Visualize concept through sketches, illustration drawing, and models
- Presentation through documentation

[CG-VII/06]-Finishing Materials & Techniques (Surface Decoration) Credit: 2

Relevance:

The aim of the course is to learn and apply various decoration techniques used for decoration of ceramic products both by industry and craft sector. Decorations on ceramic products during wet, leather hard, dry, under and over glaze stages are also introduced. The quality of decoration and visual satisfaction relate the simplicity and decoration details. Surface decoration on products has a direct relationship for marketing. Relationship of decorated product with user at all levels. Very simple scientific principle involved in processes. Relate to the learning of Design process, color and composition, material science and processes etc. Input to solve design problem. To relate users need with product decoration. To relate product for marketing and achieve over all form with aesthetic appeal.

Course objective:

This course encourages students to explore various decoration techniques for ceramic ware, applicable for both craft and large-scale industry. Relate to the learning of color and composition, material science and workshop practice etc. Input to create new surface development and decoration for different piece. To relate users need with product decoration. To relate product for marketing and achieve over all form with aesthetic appeal.

Course content:

- To understand and analyses product for decoration
- To understand materials and production processes
- Develop design concept keeping user/s need and relationship with marketing.
- Test designs on various products.
- To learn about type of decoration relevant to ceramic industry and craft sector
- To learn and understand industrial process of Decoration
- To experiment with ceramic stains and medium used for decoration
- To understand decoration by the use of under glaze and over glaze colors
- To explore various possibilities of decoration on ceramic ware such as Banding, hand painting, weaving, stenciling, tailing, spraying etc.
- To learn about ceramic transfer making and its applications

Assignments:

- Develop understanding to implement the different elements and create different motifs and parents
- Take the inspiration or understand the attributes and develop decoration accordingly
- Experimentations for on-glaze, over-glaze and underglaze decoration
- Experiments of colour bodies
- Experiments on tiles, flat and cylindrical surfaces

Evaluation criterion:

- Regularity of attendance and punctuality
- Depth and range of exploration
- Originality – courageous to think without predetermination
- Understanding and clarity about the concepts
- Active participations in group discussions and Interaction
- Quality of sketches, artwork, models, presentation and exploration
- Ability to work in a team
- Finishing in time!

Semester - VIII

[CG-VIII/01]- Entrepreneurship, Business Management & Marketing* Credit: 2

Relevance:

Students receive guidance in forming comprehensive, professional representation of their work. The class is conducted on informal basis, allowing individual presentations to vary according to the particular design product. Presentation techniques such as illustration, photography and typography and layout are considered within the constraints of portfolio intent, syntax and problem definition. The work portfolio should be presented to the pre-diploma jury, representative of the work done during his career at the institute

Course objective:

Exposure is provided through 3 stapes**,** the first stage is an introduction about how to value a product, costing the products and the marketing, with emphasis on marketing management and the demonstration of design as a marketing function.

The second stage informs the student about basic professional procedures in the practice of design. The course contents give an insight into the professional aspects which are common to all fields of Design.

The final stage concentrates entrepreneurial skills essential to professionals who choose to establish their own enterprise. The management concerns covered here are particularly crucial to the independent practitioner. These skills and aptitudes are also part of the reality of everyday decision-making within corporate structures and in all enterprises, large or small.

Course content:

- Designer attributes. Setting up a design office. Finding clients.
- Business correspondence. Brief and briefing. Letter of contract.
- Professionalism and ethics. Costing design and fee estimation.
- Management of design Process, Human factor in managing design / team work.
- Design as a Management tool, Design evaluation. Patent and design registration laws / procedure.

[CG-VIII/02]- Craft documentation* Credit: 4

Relevance:

Handicrafts are products or services provided by artisans, working primarily with their hands. The artisan very often uses traditional knowledge and her/his direct manual contribution forms a substantial or distinctive part of the end product or service. Usually there are minimal or limited inputs from machines.

The distinctive nature of handicraft comes from the fact that these goods or services can be identified with certain traditions or geographies. An artisan is a

person with special hand skills, often handed down traditionally across generations, and often linked to a complex traditional knowledge system encompassing the material, technology and / or design aspects. We cannot deny the importance of craft sector for the sustainability of our economy as we all know that in India the crafts sector comes second in employment generation. The commercial purpose of crafts in modern markets is showing immense potential as craft and craft based industries are turning out to be India's highest export earners.

Course objective:

The course is to provide an overview of the various aspects such as the local technology, the traditional methods of designing and production, the product-craftsmen-community relationship and the socio-economical environment which influences the design and production.

The course provides students a first-hand exposure to craft industry with an idea to create an urge for deeper understanding of the craft sector and the possibilities it may offer for future design inputs. This will explores how to create a template for your process documentation guide. A template makes the process of documentation processes.

The purpose of this course is to expose students to craft design activity and whereby help them acquire a definite understanding of this area of design activity. The exposure is provided in the field through the documentation methodologies and processes related to the particular product development. Inputs in research methods and documentation techniques are given prior to fieldwork. Diagnostic Study: Gathering dispersed knowledge through a participatory study is essential to learn not only about the potentials and constraints faced by a particular craft but also about the strength of linkages and support mechanisms. The participatory process helps build trust with the local craftsman and secure their positive involvement in the cluster or design development program.

Course content:

Documentation methods did not focus on conveys skills as living heritage. This paper sets out from the idea that safeguarding of traditional crafts must involve the transmitting of craft skills through learning in action. Market demands and educational system used to assurance this communication but today, maintenance and development of traditional crafts need involvement from heritage establishment.

In order to support employment to a sector incorporation of traditional knowledge, heritages are in need. This is a methodology that corresponding upcoming designers to the inheriting of intangible cultural heritage of the country. This paper deals with the documentation of traditional crafts concerning built environment toward own identity and Geographical-Indication. More specifically, it discusses the problem of exploitation of unspoken craft knowledge for the sake of educating experts, developing research and market. The goal is to find ways to minimize the loss of meaning and content in the process of externalization and re-practicing from cultural knowledge and demonstration. It

should presents and reflects upon how heritage association can set up and perform of identification in globalization era. The results involve interpretations of aesthetical and indigenous concepts of crafting knowledge, setting out from a craftsperson's methodological perception.

This course will sensitize students towards:

- Understanding of crafts as an activity
- Evolution of traditions
- Craft products, environment and material resources
- The variety of crafts, materials, techniques and skills
- Problems and potentials in design and marketing of crafts

Thus, during the field work, the following Performa may be taken as the guideline;

PART I-Social Involvement

- Introduction of craft
- Diagnostic Survey and formulation of Project Plan
- Geographical location of craft activities in detail
- The study of climate condition
- History and Origin
- Distribution According to Caste or Community
- Socio-Economical aspects

PART II-Process & Technological Involvement

- To study work environment and their living space
- Technique of Production
- Tools and Implement
- Products and Process of Manufacture
- Development and supply of improved modern tools
- Design and Technical Development Workshops
- Training of artisans
- Technological status and need based study and research provision.

PART III-Marketing Intervention

- Product survey-weight, volume, shape, size and finish, cost price
- Organizing Exhibitions
- Package and transportation
- Marketing and supply network
- Publicity through printing and electronic mode and brand building campaign
- Setting up of Handicrafts cooperative
- Market assessment, product assessment
- Establishment Common work shed
- Entrepreneurship Development Programme
- Design and development
- Changes taking place

PART IV-Financial & other Government Intervention

- Fulltime/Margin Money support
- Wage compensation to craftsman
- Engagement of expert/ consultants/ institutions etc., for providing need based assistance including guiding and monitoring.
- Material procurement & monitory transaction

PART V-Craft Specific Observation and Conclusion

- General observation
- Case Study
- Future of craft
- Role of the Designer in respective craft

The documentation should have a focus on a technical and design aspects. It should have adequate information on the background and the socio-economical environment. Sketches and prototypes should be extensively used

Methodology:

The study documentation is mainly field work based. Student would select a specific craft and study it in as much detail as possible in the given time period and record their information, observation and findings. Student should be able to discuss their information collected with teacher and other fellow students. After the field work is done a preliminary presentation is to be made to the faculty. After this the final document is to be prepared and submitted to the teacher.

Materials, tools and facilities:

Material, tools and equipments & Computer Lab required for documentation purpose.

Evaluation Criterion:

- Cognitive Skills: Communication, Perception
- Documentation Skills: Research Methodology & Data Collection
- Design & Creativity: Originality/Innovation, Content/Mapping
- General Attitudes: Motivation, Commitment, Interaction, Attentiveness

[CG-VIII/03]- Professional Exposure* **Credit: 2**

Relevance:

It would give the student an exposure to the industrial situation. It gives him/her a chance to work in industry. Making him aware of what the industrial scene is helping him to evolve as a professional capable of handling the industrial or market conditions.

Course objective:

The student should understand the design application in the particular industry or sector. She/he could undertake a short project evolving a design solution and

seeing it undergo production. This process would make him/her aware of the process required for product undergoing production. Interaction with the production line, study of material and production process costing and floor management. Study of product, evolvement of new concepts developing selected one to enable production.

[CG-VIII/04]- Elective Paper (Inter-disciplinary product(s) Credit: 4

Relevance:

Electives are interdepartmental/ multi disciplinary inputs, preferably with little to none prerequisites. These are aimed to allow students to work in areas outside their chosen/ majority fields. The course offered under this category complement the overall individual growth of the student. The electives are a dynamic one being updated every starting of the semester to bring in the emerging and relevant areas of knowledge constantly.

[CG-VIII/05]- Preparatory Project Work Credit: 2

Relevance:

However, designers solve problems by utilizing overly narrow, comfortable, and quick reductionist approaches that inadequately deal with today's complex, dynamic and diverse problems. Reductionist problem solving methods focus on collecting data to improve system components and assume the overall system will improve as a result. However, that strategy often misses important interactions between system components and emergent, "big picture" system-level effects. As a result, reductionist approaches often perform inadequately when applied to problems of high complexity.

This will introduce students to fundamental concepts of learning, problem solving, decision-making and thinking patterns, with a focus on systems thinking. Students will learn to approach problems holistically, looks for patterns and balance interrelationships between system components to achieve creative and effective solutions. Emphasis is placed on systems thinking fundamentals: defining problem situations from a systems perspective, describing and modeling problem situations, and designing and improving upon system solutions. Upon completion of the course, students will have a framework of concepts, methods, and tools that have been successfully applied to develop complex systems across a variety of industries including aerospace, energy, transportation, health care, and security.

Course objective:

The System approach describes the system requirements, operating environment, system and subsystem is very important for the designing, files and database design, input formats, output layouts, human-machine interfaces, detailed design, processing logic, and external interfaces. This course describes

the constraints in the designing (reference any transaction analyses conducted such, as resource use against productivity, or conflicts with other systems) and includes any statement made by the designer in developing the new innovation of design. On completion of all the mandatory courses-including minor projects, field experience and self study-students are required to make a formal presentation of the entire body of their work for a comprehensive review. A Jury evaluates the student's overall development, her/his approach to design as problem solving process and innovating new option without unsettling the system. Most importantly to develop ability to independently undertake a complex design project for his/her final/major in the chosen area of specialization.

The systems approach distinguishes itself from the more traditional analytic approach by emphasizing the interactions and connectedness of the different components of a system. Although the systems approach in principle considers all types of systems, it in practices focuses on the more

This is an introductory course in research methods. The contents of this module include design research methods- study in detail, ways of understanding the society's and environment system working and around , gathering data and information, research for design, research preparation and planning- piloting, mockups, data logging sheets, justifying research approaches, time management, research writing skills and idea generation techniques, design theory, current research interests, contemporary practices- design methods, tools and techniques, concurrent engineering etc. This also covers researching craft- validity, reliability, ethics and role of researcher.

Course content:

The course involves student researching in an area related to design and is expected to produce an insightful report or a paper on the topic. Students need to choose a topic suggested by a faculty member and work under faculty guidance. The work may involve primary and secondary research, creative exploration out alternatives, experimental set-ups and methodical documentation. Students are encouraged to explore new fields, materials and media, with a focus on analysis. The student is required to present a seminar on the topic at the end of the semester**.**

This will in a written statement by each student, defining the student's individual concept of design, which may be related to her/ his specialization in design or another design related subject such as, design education, design philosophy.

On completion of all the requisite courses-including projects, field experience and self study-students are required to make a formal presentation of the entire body of their work for a comprehensive review. A pre-project evaluates the student's overall development, her/his approach to design as a problem solving process and most importantly the ability to independently undertake a complex design project- the final Major Project- in the chosen area of specialization.

The System Design Document describes the system requirements, operating environment, system and subsystem architecture, files and database design, input formats, output layouts, human-machine interfaces, detailed design,

processing logic, and external interfaces. What is Systems Thinking and How Does It Relate to Sustainability?

- Introduction to Systems Thinking
- Static/Structural Complexity
  a) Static complexity. associated with problems of complex structure
  b) Dynamic complexity. associated with problems of complex behavior
  c) Analytical complexity. associated with problems that are difficult to evaluate
- Dynamic/Behavioral Complexity
- Analytical/Evaluation Complexity
- System Dynamics Modeling
- This course is to expose the students to different thoughts and perspectives on design.
- The course will present different concerns and issues in the context of design.
- The course will also expose the students to emerging areas of design.
- Relevance of design in the context of India.
- Importance of sustainable design practices.
- Preserving traditional practices.
- Designing for the underserved communities.
- Provide an overview on cognitive psychology aspects of learning and thinking (concept formation problem solving, and decision making)
- Understand the history and evolution of systems thinking
- Get a perspective on complexity and chaos and on reflecting on those type of problems
- Establish a basic understanding of various systems thinking methodologies (hard, soft, meta) and processes.
- Examine systems on designing methods
- Identify various tools to facilitate forming concepts, solving problems and making decisions
- Evaluate when it is appropriate to apply analysis thinking methods, i.e. reductionist methods (ex. data collection, scientific method, etc.) as opposed to applying systems thinking methods (ex. Systems, Breakthrough Thinking/Smart Questions, etc.)
- Describe and model solutions that will allow system thinking (ex. mind maps, feedback & causal loops, behavior over time diagrams, etc.)
- Study the different phases to various problems. (Socio - technical, supply chain, value chain / incline, etc.)

Translate system thinking objectives into a problem statement that can be solved by any design disciplines At least there should be three proposals for the Major Project should be presented for the pre-project evaluation. Based on the recommendation of the jury the Major Project area is decided in consultation with the Faculty and the coordinator of the particular discipline.

Methodology:

Inputs will be given through lectures Audio Video presentation and case studies. Students will ask for real-life assignments to collect data and be given for developing skills in Systems frame-work and modeling.

Sl. No	Topic	Assignment
1	Thinking Concepts and Systems Thinking Terminology	Class
2	What and Why Systems Thinking: A View from the Past to Present	Class & Exercise 1
3	Dealing with Complexity and Chaos	Class &Exercise 2
4	Processes & Methods I: Types of Systems Thinking	Class & Exercise 3
5	Processes & Methods II: Systems Design & problem solving	Exercise 4
6	Processes & Methods III: System Dynamics	Exercise 5
7	Smart Questions Case Study I: Describing and Understanding the Problem	Project Part I: Problem Statement
8	Smart Questions Case Study III: Living Solution for Today and Tomorrow	Project Part III: Living Solution
9	Systems Implementation	Project Part IV: Implementation
10	Class Project: Presentations	

[CG-VIII/05]- Major Project **Credit: 10**

Relevance:

The main objective of this project is to understand the behavior of a system as a whole. It also helps to understand the inter-relationship between a group of products and its elements, develop modularity if needed, to form a product system. The students are required to prepare design drawings, models and prototypes for better understanding of inter-relationships and validate design.

The two & half month Major Project is the final design project a student undertakes in order to graduate as a professional. It is a demonstration of a student's competence to render independent client-service within the constraints of the design brief, time, finance and resources.