Course Title: Architectural Modeling (2 credits)
Course Code: VIS 221
Year – II /Semester–IV

Weekly Contact Hours			Student Evaluation Scheme				
			Final		Internal		
Lecture	Tutorial	Practical	Theory	Practical	Theory	Practical	**Total**
0	**0**	**4**	**0**	**0**	**0**	**100**	**100**

Course Description:
This course introduces the students with different styles of presentation though a solid model and discourses with various model making techniques, materials and equipments concerned with architecture course. It enables the students to deliver creative ideas through physical models with varying materials and also enhances them to portray their architectural design projects with a physical model scaled in different proportions.

Course Objectives:
After successful completion of this course the students will be able to:

a. Develop design understanding through working with three-dimensional models
b. Introduce the concept of three-dimensional models as a tool for communicating design ideas.
c. Provide an understanding of the tools, materials and skills needed to construct three-dimensional models in various scale.

Course Contents:

1. Exercise I (3 hrs)
Preparation of physical model of different primitive volumes (eg. cube, cone, cylinder, pyramid etc.) using different materials like base paper, ivory sheet, etc.

2. Exercise II (2 hrs)
Preparation of volumetric composition using those physical models of different volumes prepared in exercise I using digital method (laser cutter / 3D printer).

3. Exercise III (5 hrs)
Preparation of block house (using Ivory sheet, mount board, sun board, thermocole, clay, PoP, etc) in different land contour.

4. Exercise IV (10 hrs)
Preparation of different landscape elements like furniture / product design (trees, human figures, water bodies, street lamps, pavements, table, chair, fixtures, etc.) and are placed in a landscape / site.

5. Exercise V (10 hrs)
Prepare an exterior model of architecturally significant building (residential / commercial / High-rise).

References:

1. Various workshop tool handling materials.
2. Various Books on modeling
3. Exhibition & models available
4. Francis, D. K. *Ching, Form Space & Order*
5. Mark Friend, *Making Scale Models,* 2014
6. Nick Dunn, *Architectural Model making,* 2010
7. David Neat, *Model-Making: Materials and Method,* 2008

PRS 113 Architectural Graphics (3 Credits)
Year- I /Semester-II

Weekly Contact Hours			Student Evaluation Scheme				
			Final		Internal		
Lecture	Tutorial	Practical	Theory	Practical	Theory	Practical	Total
0	0	6	0	0	0	100	100

Course Description
Various graphical techniques & rendering mediums will be incorporated for effective visual communications and drawings.

Course Objectives

a. Draw three dimensional views through principle of perspective projection.
b. Prepare set of Architectural Drawings of a building with various medium
c. Use color, tones and texture and sciography as a means of graphical representation.

Course Contents

1. Basic Principle **(8 hours)**
- 1.1 Tones (Bright and Dull tone, tonal value: high, medium and dark)
- 1.2 Texture, Medium: Pencil and Pen (use and stress)
- 1.3 Rendering Skills (Tracing of Materials and Texture)

2. Perspective Projection **(12 hours)**
- 2.1 Introduction, terms of perspective & its use
- 2.2 Types of perspective: one point, two points
- 2.3 Views of perspective projection; Normal eye view, Bird's Eye View, worm's eye view and with change of picture plane
- 2.4 Perspective projection of geometrical forms & building elements

3. Sciography **(5 hours)**
- 3.1 Introduction
- 3.2 Principle of Sciography
- 3.3 Importance & uses

4. Color **(20 hours)**
- 4.1 Poster Color (color theory, scheme, color wheel and its properties, uses and effects etc)
- 4.2 Application of Pencil Color & Water Color in architectural drawing

Exercises

Exercise I
- 1.1 Tonal Chart
- 1.2 Different types of materials and texture like building materials, trees, human figures, vehicles, furniture, etc. using pen and ink

Exercise II
- 2.1 Perspective of object changing horizon line and picture plane

2.2 One & two point Perspectives of simple geometric objects & building elements

Exercise III

3.1 Sciography projection of solid figures

3.2 Sciography projection of set of simple residence

Exercise IV

4.1 Color Wheel and Color Schemes with poster color

4.2 Rendering Techniques with pencil color and water color in set of Architectural drawing

References

1. D.K. Ching, *Architectural Graphics*
2. Robert W. Gill, *Rendering with Pen & Ink*
3. O. Halse, *Graphic thinking for Architects & Designers*
4. Nicholas T. Dines, *Landscape Perspective Drawing*

ASC 102 Communication Technique (2 credits)
Year – I /Semester– II

Weekly Contact Hours			Student Evaluation Scheme				
			Final		Internal		
Lecture	Tutorial	Practical	Theory	Practical	Theory	Practical	Total
2	2	0	50	0	50	0	100

Course Description

Today's professionals in all fields are expected to adapt to a variety of communication situations. Virtually everyone must be able to write routine workplace documents such as memos, emails, letters, and informal reports. In addition, university students and employees must create more complex forms of communication such as formal reports and proposals, instructions, definitions and descriptions, Web pages, oral presentations, video presentations, and more. This course covers all the preceding topics thoroughly and concisely.

Course Objectives

The main objectives of this course will be to enable students to

- read about using technical communication
- to know about and prepare various types of documents
- to use digital media and make presentations

Course Contents

The course is divided into the following units: (Gurak and Lannon, Parts 3 and 4)

(6 hours)

1. Memos and Application Materials
Résumés and Other Employment Materials
Memos and Letters

(6 hours)

2. Writing
Definitions
Descriptions
Summaries (14)

(6 hours)

3. Instructions and Proposals
Instructions and Procedures
Proposals

(6 hours)

4. Reports
Informal Reports
Formal Reports

(6 hours)

5. Messages and Presentations
Email and Text Messages
Blogs, Wikis, and Web Pages
Social Media
Oral Presentations and Video Conferencing

Internal Evaluation

Student's final grade for this class will be based on the following percentages:
First writing assignment: 15% (= 7.5)
Second writing assignment: 20% (= 10.0)
Mid-term Test 20% (= 10.0)
Final Test 20% (= 10)
Class participation: quiz, presentation, attendance: 25% (=12.5)

Teaching Method

The teaching method will be a mix of class lectures, demonstrations, discussions, presentations, and writing and speaking practicals.

Text Book

Gurak, Laura J., and John M. Lannon. *Strategies for Technical Communication in the Workplace*. 3rd edition, Pearson, 2016.

References

1. Lannon, John M., and Laura Gurak. *Technical Communication.* 14th edition, Pearson, 2018.
2. MyWritingLab for Technical Communication www.mywritinglab.com/
3. Instructor's Manual, by Lee Scholder, University of Minnesota, and Daun Daemon, North Carolina State University.
4. PowerPoint slides
5. MyTest, www.pearsonhighered.com/mytest/

ASC 103 Statics and Dynamics (2 credits)
Year – I /Semester – II

Weekly Contact Hours			Student Evaluation Scheme				
			Final		Internal		
Lecture	Tutorial	Practical	Theory	Practical	Theory	Practical	Total
2	2	0	50	0	50	0	100

Course Description
The course enables students to apply the nature and effects of different forces while analyzing different engineering structures.

Course Objectives
a. Identify the fundamental principles applied in mechanics
b. Apply the concept of static equilibrium of particles and rigid bodies.
c. Calculate the centroid and moment of inertia of common shapes
d. Apply the effect of friction in engineering application
e. Identify different types of motion of objects and calculate related parameters
f. Apply Newton's second law of motion

Course Contents

1. Introduction **(1 hour)**
1.1. Definition and scope of applied mechanics
1.2. Concept of statics and dynamics
1.3. Concept of particles and rigid bodies
1.4. Fundamental concept and principles of mechanics
1.5. System of units

2. Force Acting on Particles and Rigid Bodies **(6 hours)**
2.1. Types of force, translational and rotational force
2.2. Resolution of force into components, resultant of concurrent forces (2D & 3D)
2.3. Principle of transmissibility and equivalent forces
2.4. Moment of a force about a point and about an axis
2.5. Moment of a couple
2.6. Resultant of a system of forces

3. Equilibrium of Particles and Rigid Bodies **(5 hours)**
3.1. The free body diagram
3.2. Concept of static equation of equilibrium
3.3. Equilibrium of particles
3.4. Equilibrium of rigid bodies

4. Distributed Forces **(6 hours)**
4.1. Center of gravity and centroid of line, area, volume
4.2. Second moment of area/moment of inertia of area
4.3. Parallel axis theorem
4.4. Radius of gyrations
4.5. Polar moment of inertia

5. Friction Forces **(3 hours)**

5.1. Law of friction
5.2. Coefficients of friction and angle of friction
5.3. Application of friction in engineering examples

6. Kinematics of Particles **(5 hours)**

6.1. Rectilinear kinematics: Continuous motion
6.2. Position, velocity and acceleration of particles
6.3. Determination of motion of particles
6.4. Uniform rectilinear motion of particles
6.5. Uniformly accelerated rectilinear motion of the particles
6.6. Curvilinear motion of particles (Introduction only): Rectangular components of velocity and acceleration; tangential and normal components of acceleration; radial and transverse components of velocity and acceleration

7. Kinetics of Particles: Force and Acceleration **(4 hours)**

7.1. Newton's second law of motion
7.2. Equation of motion for a particle and engineering applications

Text Book

Beer, F.P. and E.R. Johnston, *Mechanics for Engineers*, McGraw-Hill Book. Co., New York, USA.

Reference Books

1. Meriam J L and Kraige LG, *Engineering Mechanics, Statics and Dynamics*
2. Hibbler RC, *Engineering Mechanics, Statics and Dynamics*

VIS 123 Architectural Independent Study (2 credit)
Year – I /Semester–II

Weekly Contact Hours			Student Evaluation Scheme				
			Final		Internal		
Lecture	Tutorial	Practical	Theory	Practical	Theory	Practical	Total
0	0	2	0	0	50	100	100

Course Description
It is designed to conduct research on architecture related subjects and prepare a report & presentation based on the findings.

Course Objectives

a. Undertake independent study on a subject of their own choice related to architecture
b. Improve presentation skills

Course Contents **(30 hours)**

1. Selection of subject of choice related to architecture, independent research on the subject and preparation of final report.
2. Preparation of findings through oral, graphical, electronic media.

Some of the topics of choice could include the followings:

a. Building component of traditional or modern buildings such as doors/windows, roofs, building materials, finishing etc.
b. Study of international/regional/Nepali architectural philosophy, important works
c. Vernacular architecture of Nepal covering various ethnic groups
d. Influence of culture, climate, topography, materials etc. in design and construction of buildings.

PRS 115 Basic Design II (5 Credits)
Year- I /Semester-II

Weekly Contact Hours			Student Evaluation Scheme				
			Final		Internal		
Lecture	Tutorial	Practical	Theory	Practical	Theory	Practical	Total
1	0	10	0	0	0	100	100

Course Description

Exercise focuses on exploration of three-dimensional forms, space and order. Various methods of working will be developed in which the theme of space is primary and to be explored in relation to the other parallel subjects of Year I. Drawing and graphic presentation skills will be developed concurrently with the Design studios. Specifically, it aims to further develop the understanding of design vocabulary introduced in Basic Design I as well as introduce design determinants of form and develop skills in three-dimensional design.

Course Objectives

a. Design according to anthropometrics, identifying and gauging the fundamental measurements in a variety of design scenarios
b. Further develop the vocabulary of design principles and their application in architectural design for both internal and external spaces
c. Think, express and communicate design ideas spatially through diagrams, sketching, physical model making, and photography.
d. Articulate spatial experiences in relationship to anthropometrics through working in plan, section and 3D models.
e. Conceptualize space in terms of solid and void through design strategies (eg: addition and subtraction, etc).
f. Familiarize with Nepalese socio-cultural context and reflect it into the spaces developed

Course Contents

1. Designing for People: Anthropometry (15 hours)

1.1 Understanding the measurements of the human body
1.2 Space for human use: fit, movement, accommodation of activities, programmatic requirements, social-cultural-religious determinants in design
1.3 Relative Anthropometrics

2. Space Visualization (25 hours)

Design determinants and application of design elements; point, line, space, solid, interior space for single occupation.

3. Space Making **(35 hours)**

Design determinants and application of design elements; point, line, space, solid, exterior volumetric massing.

Exercises

Exercise I

Exercise with anthropometry and relative anthropometry in different spaces like bedroom, corridor, toilet, kitchen, dining, reception and waiting, etc.

Exercise II

Exercise with space design considering natural light, ventilation and circulation. Design projects could include exercises related to internal & external volumes (eg. play of basic geometrical forms, Nepalese traditional forms, Meditation Pavilion, etc.).

Exercise III

Exercise of volumetric design along with space consideration whereby the mass or solid contains the private functions of a residence and the space or void is to be used for more public or circulation spaces. Design projects could include a Compact Studio Residence,

Field Trips

- A field trip (with report writing) of 4 days/ 3 nights to a social-cultural-religiously significant locality to visualize and understand the built environment including architecture, public open spaces, lighting, materials, etc.
- Single day field trips as case studies (3 visits)

Reference Books

1. Simon Unwin.*Analysing Architecture*. Psychology Press, 1997.
2. Ching, Francis D. *Architecture: Form, Space and Order.*
3. Venturi, Robert. *Complexity and contradiction in architecture*. 2nd ed. Introduction by Vincent Scully. New York: Museum of Modern Art in association with the Graham Foundation for Advanced Studies in the Fine Arts, Chicago; New York: Distributed by Harry N. Abrams, 1992.
4. Aires Mateus, Manuel Rocha de, Francisco Xavier Rocha de Aires Mateus, Juan Antonio Cortés, and Ricardo Carvalho. Aires Mateus 2002-2011. *El Croquis* no. 154 (2011): entire issue, 259 pages.