October University for Modern Sciences and Arts (MSA)

Faculty of Engineering

Architecture Engineering Program (ASE)

Module Outlines

2014/2015
Module Outlines:

Faculty of Engineering curricula are designed according to the most up-to-date international standards, taking into consideration the Supreme Council of Universities (Engineering Studies Section Committee) requirements, and fulfilling the local and regional needs.

All course outlines highlight the role of new and emerging technologies in meeting challenges posed by the information and communication technology.

Adopting the Greenwich University's Quality Assurance (QA) under the supervision of Britain's QAA, the course outline includes:

Aims, Syllabus, Learning Outcomes, Teaching/Learning Strategies, Learning Materials, Assessment Scheme, Assessment Pattern, Learning Unit Contact Hours, and Module Leader.
100's LEVEL
MODULES
AIMS
This module is designed to give students an in depth coverage of functions, analysis of graphical information, limits continuity, and derivative of functions. Inverse functions, transcendental functions, L’hospital rule. Analysis of functions. Functions of several variables, partial derivative.

SYLLABUS

<table>
<thead>
<tr>
<th>Topics</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Functions-Properties of Functions – Composite Functions.</td>
<td></td>
</tr>
<tr>
<td>Limits – Computational Techniques of Limits.</td>
<td></td>
</tr>
<tr>
<td>Continuity – Limits and Continuity of Trigonometric Functions.</td>
<td></td>
</tr>
<tr>
<td>Inverse Functions – Logarithmic and Exponential Functions – Inverse Trignometric Functions – Hyperbolic Functions – Inverse Hyperbolic Functions.</td>
<td></td>
</tr>
<tr>
<td>L'Hospital Rule – Indeterminate Forms.</td>
<td></td>
</tr>
<tr>
<td>Taylor and Maclurin series.</td>
<td></td>
</tr>
<tr>
<td>Functions of Two or More Variables – Partial Derivatives – Chain Rules.</td>
<td></td>
</tr>
</tbody>
</table>

LEARNING OUTCOMES

Knowledge

After completing this module, students will be able to:

1. Understand the basic concepts and principles of mathematics.
2. Acquire knowledge and understanding of the foundations of Calculus Problems and Techniques.
3. Learn the various modern techniques, used in mathematical problems.

Skills

After completing this module, students will be able to:

1. Solve engineering problems by suitable mathematical techniques.
2. Recognize the various mathematical terminology.
3. Develop mathematical skills through tackling and solving engineering problems.

Teaching/Learning Strategies

- Lectures.
- Tutorials.

Learning Materials

Software Requirements:

- MAPLE, DRIVE, MATHEMATICA, MATLAB.
Useful Websites:
- http://www.math.ucdavis.edu
- http://www.math.nmc.edu
- http://www.math.montana.edu
- http://www.ugrad.math.ubc.ca

Reference Text:

Supplementary Readings:

Assessment Scheme
- Weekly written Assignments (12 Home Assignments).
- Undeclared Short written Quizzes (4 10-min. Quizzes).
- Class written Tests (2 1.5-hr. Tests).
- Unseen written Mid-Term Exam (1.5-hr. Exam).
- Unseen written Final-Exam (3-hr. Exam).

Assessment Pattern
- Class Participation 5%
- Assignments 15%
- Tests and Quizzes 20%
- Unseen Mid-Term Exam 20%
- Unseen Final Exam 40%

Total 100%

Learning Unit Contact Hours Per Week
- Lectures 3 hrs/week
- Tutorials 1.5 hrs/week
- Total class contact hours 63 hrs/semester
- Total self study hours 45 hrs/semester
- Total study hours 108 hrs/semester

Module Leader
Staff
Module Code : **BSC 152**  
Title : **Engineering Physics I**  
Level : 1  
Credit Hours : 3  
Prerequisites : None

**AIMS**
This module is designed to give the student a broad understanding of the fundamentals of physics and their applications. The module is particularly useful for the preparation of future studies in engineering.

**SYLLABUS**

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Units and Dimensions</td>
</tr>
<tr>
<td>Scalar and Vector Quantities</td>
</tr>
<tr>
<td>Uniform circular motion, Force, work, energy and power</td>
</tr>
<tr>
<td>Oscillations and wave motion</td>
</tr>
<tr>
<td>Elastic properties of matter</td>
</tr>
<tr>
<td>Pressure in fluids</td>
</tr>
<tr>
<td>Fluid statics – Pascal’s and Archimedes’ principles</td>
</tr>
<tr>
<td>Fluid dynamics – Equation of continuity and Bernoulli’s equation</td>
</tr>
<tr>
<td>Viscous flow</td>
</tr>
<tr>
<td>Thermal expansion of solids and liquids</td>
</tr>
<tr>
<td>Heat and thermal energy – Heat and work</td>
</tr>
<tr>
<td>The first law of thermodynamics</td>
</tr>
<tr>
<td>Heat transfer</td>
</tr>
<tr>
<td>Kinetic theory of gases</td>
</tr>
</tbody>
</table>

**Laboratory Experiments:**
- Determination of the acceleration of gravity using a simple pendulum
- Determination of the acceleration of gravity using the free fall method
- Determination of the elastic constant of a spring
- Determination of Young’s modulus
- Determination of the coefficient of viscosity for a liquid
- Determination of the value of Joule’s equivalent of heat
- Determination of the specific heat of a solid

**LEARNING OUTCOMES**

**Knowledge**
**After completing this module, students will be able to:**
1. Understand the basic concepts and principles of Sciences.
2. Match the relationships between theory and experimentation.
3. Describe basic physical theories, and prove them in the laboratory.
4. Classify scientific factors affecting the results.
5. Enable students to tackle practical problems scientifically.

**Skills**
**After completing this module, students will be able to:**
1. Develop laboratory experimentation skills to real-world problems.
2. Communicate effectively, particularly to the scientific community using the language of physics and mathematics.
3. Learn how to work effectively as a member of a group.
4. Handle equipment in a safe and effective manner.
5. Carry-out scientific duties in an ethical, professional manner.

**Teaching/Learning Strategies**
- Lectures
- Tutorials
- Laboratories
- Projects

**Learning Materials**

**Hardware Requirements:**
- Mechanics, properties of matter, and thermal experiments in Physics I Lab.

**Reference Texts:**

**Supplementary Readings:**

**Assessment Scheme**
- Weekly Assignments.
- Tests and Quizzes.
- Projects and Reports.
- Laboratory Final Test.
- Unseen Written Mid-Term Exam.
- Unseen Written Final-Exam.

**Assessment Pattern**

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignments</td>
<td>10 %</td>
</tr>
<tr>
<td>Tests and Quizzes</td>
<td>10 %</td>
</tr>
<tr>
<td>Laboratory Test</td>
<td>10 %</td>
</tr>
<tr>
<td>Term Projects and Reports</td>
<td>10 %</td>
</tr>
<tr>
<td>Unseen Mid-Term Exam</td>
<td>20 %</td>
</tr>
<tr>
<td>Unseen Final Exam</td>
<td>40 %</td>
</tr>
</tbody>
</table>

**Total** 100%

**Learning Unit Contact Hours**
- Lectures 3 hrs / week
- Tutorials 1.5 hrs / week
- Laboratories 1.5 hrs / week
- Total class contact hours 84 hrs / semester
- Total self study hours 60 hrs / semester
- Total study hours 144 hrs / semester

**Module Leader**

Staff
Module Code : GSE 153
Title : Engineering Mechanics I
Level : 1
Credit Hours : 3
Prerequisites : None

AIMS
This module is designed to provide freshmen students with a perspective on Engineering Mechanics and Statics. Statics of particles. Forces and vectors. Rectangular components in a plane. Forces and vectors components in a space. Vectors addition. Scaler and vector products. Equilibrium of particle in a plane. Equilibrium of particle in a space. Rigid bodies. Equivalent system of forces, Moment of a force about a point and about a given axis in a rigid body and moment of a couple. Reduction of moments and couple into resultant of moments and wrench, equilibrium of rigid bodies for 2-D and 3-D structure. Center of gravity of 2-D and 3-D body. Centriods of areas and lines. Moment of inertia of areas and bodies.

SYLLABUS

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statics of Particles: Plane.</td>
</tr>
<tr>
<td>Statics of Particles: Space.</td>
</tr>
<tr>
<td>Statics of Rigid Bodies: Vector Product.</td>
</tr>
<tr>
<td>Statics of Rigid Bodies: Moments.</td>
</tr>
<tr>
<td>Moment – Couple and Wrench.</td>
</tr>
<tr>
<td>2-D Equilibrium Structure.</td>
</tr>
<tr>
<td>3-D Equilibrium Structure.</td>
</tr>
<tr>
<td>2-D Centriods and Center of Gravity.</td>
</tr>
<tr>
<td>3-D Centriods and Center of Gravity.</td>
</tr>
<tr>
<td>2-D Moment of Inertia.</td>
</tr>
<tr>
<td>3-D Moment of Inertia.</td>
</tr>
<tr>
<td>Real Case Studies.</td>
</tr>
</tbody>
</table>

LEARNING OUTCOMES
Knowledge
After completing this module, students will be able to:

1. Understand the concepts of engineering mechanics and statics.
2. Classify the mechanical processes including the structure design and their different components.
3. Explore the theory of static problems and its applications.

Skills
After completing this module, students will be able to:

1. Develop skills in solving engineering mechanics and statics problems.
2. Apply the theory of Mechanics to structure design.
3. Solve static problems of engineering mechanics through performing a project.

**Teaching/Learning Strategies**
- Lectures.
- Individual/Group Projects.
- Tutorials.
- Class Presentation.

**Learning Materials**
**Useful Websites:**
- [http://www.statics.com](http://www.statics.com)
- [http://www.ent.ohiou.edu](http://www.ent.ohiou.edu)
- [http://www.amazon.com](http://www.amazon.com)

**Reference Text:**

**Supplementary Readings:**

**Assessment Scheme**
- Weekly written Assignments (12 home Assignments).
- Short written Quizzes (4 10-min. Quizzes).
- Class written Tests (2 1.5-hr. Tests).
- Individual/Group Project.
- Unseen written Mid-Term Exam (1.5-hr. Exam).
- Unseen written Final Exam (3-hr. Exam).

**Assessment Pattern**
- Class Participation 10%
- Assignments 10%
- Tests and Quizzes 20%
- Unseen Mid-term Exam 20%
- Unseen Final Exam 40%

| Total | 100% |

**Learning Unit Contact Hours**
- Lectures 3 hrs / week
- Tutorials 1.5 hrs / week
- Total class contact hours 63 hrs/semester
- Total self study hours 45 hrs/semester
- Total study hours 108 hrs/semester

**Module Leader**
- Staff
Module Code : GSE 154  
Title : Engineering Graphics  
Level : 1  
Credit Hours : 3  
Prerequisites : None

AIMS
This module is designed to provide freshmen students with an overview of engineering graphics. It deals with the graphic language development of design ideas into sketches. Drawing tools required in professional practice. Lettering styles. Definitions of terms and geometric construction in technical drawings. Methods of viewing an object to get its necessary dimensions. Showing complicated interiors of objects (Sectioning). Preparing drawings for the presentation of a design idea (Pictorial Isometric Drawing). Introduction to mechanical assembly principles: Standards of fasteners (threaded bolts and nuts, pins, gears, bearings, keys); Standards of fits and tolerances; Standards of surface finish and geometrical tolerances. Use of AutoCAD.

SYLLABUS
<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graphic Language and Manual Drafting Instruments Used in Drawings.</td>
</tr>
<tr>
<td>Sheet Sizes, Drawing Scale, Lettering, Line Conventions and Dimensioning.</td>
</tr>
<tr>
<td>Geometric Construction</td>
</tr>
<tr>
<td>Orthographic Projection on One, Two, Three Planes.</td>
</tr>
<tr>
<td>Projection of a third view, and Drawing Isometric View from Given Two Views.</td>
</tr>
<tr>
<td>Sectional Views (Full, Half, Offset, Aligned, Partial, Moved and Revolved).</td>
</tr>
<tr>
<td>Dimensioning, Fits, Allowances, Geometric Tolerances, and Surface Roughness.</td>
</tr>
<tr>
<td>Threaded Fasteners (Bolts and Nuts, Washers, …..)</td>
</tr>
<tr>
<td>Miscellaneous Types of Fasteners (Keys, Pins, Retaining Rings, …..).</td>
</tr>
<tr>
<td>Working Drawing, and Assembly Drawing.</td>
</tr>
<tr>
<td>Principles of Drawing Gears and Bearings in Assembly.</td>
</tr>
</tbody>
</table>

LEARNING OUTCOMES

A- Knowledge

After completing this module, students will be able to:

1. Understand the fundamentals of engineering graphics.
2. Develop various technical drawings with necessary views and dimensions.
3. Enlarge students' imagination capability in understanding the mechanical drawings.
4. Understand various types of engineering component connections.
5. Identify detail parts of an assembly, then draw the assembled parts and make the required sections in the assembly.
6. Choose the type of fit between the mating parts, and calculate the allowances and tolerances for the assembled parts as needed.

B- Skills

After completing this module, students will be able to:
1. Develop skills in visualizing the various views of mechanical parts.
2. Apply skills in assembling various mechanical parts.
3. Learn the dimensional tolerances, fits, and surface finish.
4. Develop Constructional Drawings.

Teaching/Learning Strategies
- Design studio.
- Auto CAD Lab.

Learning Materials

Hardware Requirements:
- Various manual drawing tools.
- PC & DataShow Projector.
- Computer Lab, Printers.

Software Materials
- Auto CAD 2010 Program.

Useful Websites:
- [http://www.ces.clemson.edu](http://www.ces.clemson.edu)
- [http://www.osu.okmulgee.edu](http://www.osu.okmulgee.edu)
- [http://www.ces.celemson.edu](http://www.ces.celemson.edu)
- [http://www.mhhe.com](http://www.mhhe.com)
- [http://www.osu-okumulgee.edu](http://www.osu-okumulgee.edu)
- [http://www.ces.clemson.edu](http://www.ces.clemson.edu)

Reference Text:

Supplementary Readings:

Assessment Scheme
- Weekly Assignments (10 Home Assignments).
- Class Tests (2 1.5-hr. Tests).
- Unseen Mid-Term Exam (2-hr. Exam).
- Unseen Final-Exam (4-hr. Exam).

Assessment Pattern
- Studio Participation 10%
- Lab participation 10%
- Assignments (Studio and Lab) 10%
- Tests and Quizzes 10%
- Unseen Mid-Term Exam 20%
- Unseen Final Exam 40%

Total 100%
<table>
<thead>
<tr>
<th>Learning Unit Contact Hours</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Studio &amp; Lab Work</td>
<td>4.5 hrs / week</td>
</tr>
<tr>
<td>• Lectures</td>
<td>1.5 hrs / week</td>
</tr>
<tr>
<td>• Total studio &amp; Lab contact hours</td>
<td>84 hrs/semester</td>
</tr>
<tr>
<td>• Total self work hours</td>
<td>60 hrs/semester</td>
</tr>
<tr>
<td>• Total work hours</td>
<td>144 hrs/semester</td>
</tr>
</tbody>
</table>

**Module Leader**

Staff
Module Code: COM 155
Title: Introduction to Information Technology
Level: 1
Credit Hours: 3
Prerequisites: None

AIMS
This module is designed to familiarize students with efficient use of computers, devices and applications. The lecture part of this course serves as an introduction to computer-related terminology and concepts, and as an investigation of the internal components of a computer system (motherboard, microprocessor, primary storage, buses, ports and add-on boards, secondary storage devices, output devices). Introduction to Computer graphics and Computer networks are to be introduced as well. In addition, the course introduces common software concepts, operating systems and programming languages. The AUTOCAD and MATLAB packages are to be introduced as well. The tutorial part of this course should improve keyboarding skills. It introduces the microcomputer platform with emphasis on windows environment, the use of Internet: navigation and search capabilities. Training on popular computer application packages, mainly, Microsoft Office (including word processor, spreadsheet, presentation, graphics & databases), Working with the internet, AUTOCAD and MATLAB.

SYLLABUS

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computers: Introduction</td>
</tr>
<tr>
<td>The Central Processing Unit and numbering systems</td>
</tr>
<tr>
<td>Input and Output</td>
</tr>
<tr>
<td>Introduction to Matlab and functions representation</td>
</tr>
<tr>
<td>Programming and Languages: Flow charting (problem solving and algorithms introduction)</td>
</tr>
<tr>
<td>Introduction to AutoCAD and graphics designing programs</td>
</tr>
<tr>
<td>Storage Devices</td>
</tr>
<tr>
<td>The Internet and searching net</td>
</tr>
<tr>
<td>Networks</td>
</tr>
<tr>
<td>Introduction to AutoCAD and graphics designing programs</td>
</tr>
</tbody>
</table>

LEARNING OUTCOMES

Knowledge

After completing this module, students will be able to:

1. Explore the internet and search for a specific subject.
2. Learn more about Autocad and Matlab.
3. Discuss current ethical and social issues associated with computing.

Skill

After completing this module, students will be able to:
1. Use applications (word processing, database, spreadsheets, presentations, and graphics).
2. Organize and retrieve information on a computer.
3. Use-with appreciated skill-the MS-office and internet tools.

**Teaching/Learning Strategies**
- Lectures.
- Computer Laboratories.
- Class Presentation.

**Learning Materials**

**Software Requirements:**
- MATLAB
- AUTOCAD
- MS-Office
- Internet Explorer

**Useful Websites:**
- http://www.prenhall.com/~longlong
- http://www.gpc.edu/
- http://www.it4all.co.uk/ (ICDL Course)
- http://www.howstuffworks.com/ (How stuff works)
- http://www.caam.rice.edu/~timwar/MA375F03/MA375.html

**Reference Text:**

**Supplementary Readings:**

**Assessment Scheme**
- Weekly computer Assignments (8 Home Assignments).
- Short computer Quizzes (4 10-min. Quizzes).
- Class computer Tests (2 1.5-hr. Tests).
- Unseen computer Mid-Term Exam (1.5-hr. Exam).
- Unseen computer Final-Exam (3-hr. Exam).

**Assessment Pattern**
- Class & Laboratory participation 10%
- Assignments and Quizzes 10%
- Lab work and Projects 20%
- Unseen Midterm Examination 20%
- Unseen Final Examination 40%

Total 100%

**Learning Unit Contact Hours**
- Lectures 1.5 hrs / week
- Computer Laboratory 3 hrs / week
- Total contact hours 63 hrs/semester
- Total self study hours 45 hrs/semester
- Total study hours 108 hrs/semester

**Module Leader**

Staff
**AIMS**

This module is designed to help students in effectively writing academic essays and avoiding common errors, teach students how to read comprehension passages, to learn style and organization patterns to do summary writing and understand vocabulary in context and to introduce specialized vocabulary items pertaining to Engineering Sciences.

<table>
<thead>
<tr>
<th>SYLLABUS</th>
<th>Topics</th>
</tr>
</thead>
</table>
| **Writing: the Essay** | - Introduction of writing correction code  
  - From Grammar to Writing: The Sentence |
| **Reading: “Unit I”** | - Writing: Describing a Person  
  - From Grammar to Writing: Subject/Verb agreement |
| **Reading: “Unit II”** | - Writing: Describing a Place  
  - From Grammar to Writing: Editing exercises |
| **Reading: “Unit III”** | - Writing: Describing an Event  
  - From Grammar to Writing: Parallelism |
| **Reading: “Unit IV”** | - Writing: Describing a Process  
  - From Grammar to Writing: Editing exercises |
| **Reading: “Unit V”** | - Writing: Distinguishing facts from opinions  
  - Specialized Vocabulary |
| **Writing: Directed Free Writing/Editing** | - From: Grammar to Writing: Parallelism of Gerunds and Infinitives  
  - Specialized Vocabulary |
| **Reading “Unit VI”** | - Writing: Process Writing  
  - From Grammar to Writing: Sentences and Fragments |
| **Reading: “Unit VII”** | - Writing: Process Writing  
  - From Grammar to Writing: Editing exercises |
| **Reading: “Unit VIII”** | - Writing: Expository Writing (Comparison and Contrast)  
  - From Grammar to Writing: Punctuation of Adjective Clauses |
| **Reading: “Unit IX”** | - Writing: Expository Writing (Definition and Partition)  
  - From Grammar to Writing: Editing exercises |
| **Reading: “Unit X”** | - Writing: Expository Writing (Classification)  
  - From Grammar to Writing: Avoiding run-on sentences and comma splices |
| **Reading: “Unit XI”** | - Writing: Practice – Summary Writing  
  - From Grammar to Writing: Editing exercises |
Learning Outcomes

Knowledge

After completing this module, students will be:

1. Demonstrate in the writing, a clear knowledge of the subject, awareness of the reader, appropriate organization, correct use of punctuation, style and coherence.
2. Analyze and criticize the style and organization of different texts.
3. Provide an understanding of specialized vocabulary in context.

Skills

After completing this module, students will be able to:

1. Write effective five-paragraph essays.
2. Apply multi-draft writing which involves revision and editing of their essays.
3. Correct earlier drafts using the feedback and the correction codes provided by the instructor.
4. Master writing effective summaries focusing on main ideas.
5. Master specialized vocabulary pertaining to pharmaceutical sciences.

Teaching/Learning Strategies

- Lectures.
- Tutorials.

Learning Materials

Useful Websites
- http://www.better.english.com
- http:// www.eslcafe.com

Reference Text

Supplementary Readings

Assessment Scheme

- Weekly assignment (24 assignments).
- Individual term project.
- Unseen Mid-Term Exam.
- Unseen Final Exam.

Assessment Pattern

- Class participation 5%
- Assignments 5%
- Quizzes 10%
- Portofolio 20%
- Unseen Mid-Term Exam 20%
- Unseen Final Exam 40%

Total 100%

Learning Unit Contact Hours

- Lectures 3 hrs / week
- Tutorials 1.5 hrs / week
- Total class contact hours 63 hrs / semester
- Total self study hours 45 hrs / semester
- Total study hours 108 hrs / semester

Module Leader

Staff
Module Code : MAT 161
Title : Calculus II
Level : 1
Credit Hours : 3
Prerequisites : MAT 151

AIMS
This module is designed to enable students to analyses integration, applications of definite integrals, double and triple integrals, polar, cylindrical and spherical coordinates, infinite series, Taylor and Maclurin series.

SYLLABUS

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antiderivatives- The Indefinite Integrals – Integration by Substitution.</td>
</tr>
<tr>
<td>Techniques of integration- Basic Integration formulas- Integration by parts- Reduction formulas- Integration using partial fractions- Trignometric Integrals- Trignometric Substitution.</td>
</tr>
<tr>
<td>Double Integrals – Double Integrals in Polar Coordinates – Areas.</td>
</tr>
<tr>
<td>Triple Integrals – Triple Integrals in Cylindrical and Spherical Coordinates – Volumes.</td>
</tr>
<tr>
<td>Infinite Series – Convergence Tests.</td>
</tr>
<tr>
<td>Vector Fields- Gradient Fields- Divergence and curl- Laplacian operator.</td>
</tr>
</tbody>
</table>

LEARNING OUTCOMES

Knowledge

After completing this module, students will be able to:

1. Understand the essential concepts and principles of mathematics.
2. Acquire knowledge and understanding of the foundations of Calculus Problems and Techniques.
3. Learn the various modern techniques used in mathematical problems.

Skills

After completing this module, students will be able to:

1. Solve engineering problems by suitable mathematical techniques.
2. Recognize the various mathematical terminology.
3. perform integration in different coordinate systems.

Teaching/Learning Strategies

- Lectures.
- Tutorials.
### Learning Materials

#### Software Requirements:
- MAPLE, DRIVE, MATHEMATICA, MATLAB.

#### Useful Websites:
- [http://www.omega.albany.edu](http://www.omega.albany.edu)
- [http://www.math.nmc.edu](http://www.math.nmc.edu)
- [http://www.math.montana.edu](http://www.math.montana.edu)
- [http://www.ugrad.math.ubc.ca](http://www.ugrad.math.ubc.ca)

#### Reference Text:
- Thomas, Calculus- Early Transcendentals, 11th ed., Pearson- Addition wesly, 2006, Ch. 4-6,8,16

#### Supplementary Readings:

### Assessment Scheme

- Weekly written Assignments (12 Home Assignments).
- Undeclared Short written Quizzes (4 10-min. Quizzes).
- Class written Tests (2 1.5-hr. Tests).
- Unseen written Mid-Term Exam (1.5-hr. Exam).
- Unseen written Final-Exam (3-hr. Exam).

### Assessment Pattern

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class Participation</td>
<td>5%</td>
</tr>
<tr>
<td>Assignments</td>
<td>15%</td>
</tr>
<tr>
<td>Tests and Quizzes</td>
<td>20%</td>
</tr>
<tr>
<td>Unseen Mid-Term Exam</td>
<td>20%</td>
</tr>
<tr>
<td>Unseen Final Exam</td>
<td>40%</td>
</tr>
</tbody>
</table>

**Total 100%**

### Learning Unit Contact Hours

<table>
<thead>
<tr>
<th>Component</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lectures</td>
<td>3 hrs/week</td>
</tr>
<tr>
<td>Tutorials</td>
<td>1.5 hrs/week</td>
</tr>
<tr>
<td>Total class contact hours</td>
<td>63 hrs/semester</td>
</tr>
<tr>
<td>Total self study hours</td>
<td>45 hrs/semester</td>
</tr>
<tr>
<td>Total study hours</td>
<td>108 hrs/semester</td>
</tr>
</tbody>
</table>

### Module Leader

Staff
Module Code : BSC 162
Title : Engineering Physics II
Level : 1
Credit Hours : 3
Prerequisites : BSC 152

AIMS
This module is designed to enable students to demonstrate the basic concepts and principles of electricity and magnetism, and their applications in the real world. It deals with electric circuits and solving circuits using the network reduction method and Kirchhoff’s rules. The module also encourages students to perform practical projects in various aspects of physics.

SYLLABUS

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electric charges and Coulomb’s law</td>
</tr>
<tr>
<td>Electric fields and electric lines</td>
</tr>
<tr>
<td>Gauss’s law and its applications</td>
</tr>
<tr>
<td>Electric potential energy and electric potentials</td>
</tr>
<tr>
<td>Capacitors and dielectrics</td>
</tr>
<tr>
<td>Electric currents and DC circuits</td>
</tr>
<tr>
<td>Magnetic fields</td>
</tr>
<tr>
<td>Magnetic force on a charge</td>
</tr>
<tr>
<td>Magnetic field of an electric current</td>
</tr>
<tr>
<td>Magnetic induction</td>
</tr>
<tr>
<td>Electromagnetic waves - Maxwell's equations</td>
</tr>
<tr>
<td>Sound waves</td>
</tr>
<tr>
<td>Wave optics</td>
</tr>
</tbody>
</table>

Laboratory Experiments:
- Determination of the Dielectric constant.
- Determination of the time constant of a Capacitor.
- Determination of an unknown resistance (Ohm’s law).
- Determination of the total resistance of series and parallel DC circuits
- Determination of the fill factor of a photovoltaic cell.
- Determination of the horizontal component of the earth's magnetic field.
- Determination of the velocity of sound.
- The Hall Effect.

LEARNING OUTCOMES

Knowledge

After completing this module, students will be able to:
1. Understand the basic concepts and principles underlying electrical and magnetic phenomena.
2. Match the relationships between theory and experimentation.
3. Express basic theories of electricity and magnetism and prove them experimentally in the laboratory.
4. Classify scientific factors affecting the results.
5. Enable students to tackle practical problems scientifically.
Skills

After completing this module, students will be able to:
1. Develop laboratory experimentation skills to real-world problems.
2. Communicate effectively, particularly to the scientific community using the language of physics and mathematics.
3. Work effectively as a member of a team.
4. Handle equipment in a safe and effective manner with regard to their own safety and the safety of others.
5. Carry-out all duties in an ethical and professional manner.

Teaching/Learning Strategies
- Lectures
- Tutorials
- Laboratories
- Projects

Learning Materials

Hardware Requirements:
- Electrical and Magnetic Experiments are performed in Physics II Lab.

Reference Texts:

Supplementary Readings:

Assessment Scheme
- Weekly Assignments.
- Tests and Quizzes.
- Projects and Reports.
- Laboratory Final Test.
- Unseen Written Mid-Term Exam.
- Unseen Written Final-Exam

Assessment Pattern

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignments</td>
<td>10 %</td>
</tr>
<tr>
<td>Tests and Quizzes</td>
<td>10 %</td>
</tr>
<tr>
<td>Laboratory Test</td>
<td>10 %</td>
</tr>
<tr>
<td>Term Projects and Reports</td>
<td>10 %</td>
</tr>
<tr>
<td>Unseen Mid-Term Exam</td>
<td>20 %</td>
</tr>
<tr>
<td>Unseen Final Exam</td>
<td>40 %</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100 %</strong></td>
</tr>
</tbody>
</table>

Learning Unit Contact Hours

<table>
<thead>
<tr>
<th>Component</th>
<th>Hours/Week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lectures</td>
<td>3</td>
</tr>
<tr>
<td>Tutorials</td>
<td>1.5</td>
</tr>
<tr>
<td>Laboratories</td>
<td>1.5</td>
</tr>
<tr>
<td>Total class contact hours</td>
<td>84</td>
</tr>
<tr>
<td>Total self study hours</td>
<td>60</td>
</tr>
<tr>
<td>Total study hours</td>
<td>144</td>
</tr>
</tbody>
</table>

Module Leader
Staff
AIMS
This module is designed to provide students with a perspective on various issues of engineering mechanics and dynamics, kinematics of particles, rectilinear and curvilinear motion, kinetics of particles, linear and angular motion, energy and momentum of particles, kinematics of rigid bodies in translation and curvilinear motion. Forces and accelerations of plane motion for rigid bodies – energy and momentum of rigid bodies. Mechanical vibration.

SYLLABUS

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kinematics: Rectilinear Motion of Particle.</td>
</tr>
<tr>
<td>Erratic Motion.</td>
</tr>
<tr>
<td>Curvilinear Motion of Particle: Cartesian Coordinates.</td>
</tr>
<tr>
<td>Motion of Projectiles.</td>
</tr>
<tr>
<td>Curvilinear Motion of Particle: Normal and Tangential Coordinates.</td>
</tr>
<tr>
<td>Curvilinear Motion of Particle Polar Coordinates.</td>
</tr>
<tr>
<td>Kinetics of Particle: Force and Acceleration.</td>
</tr>
<tr>
<td>Mechanical Vibration.</td>
</tr>
<tr>
<td>Circular Motion.</td>
</tr>
<tr>
<td>Impulse and Momentum.</td>
</tr>
<tr>
<td>Real Case Studies.</td>
</tr>
</tbody>
</table>

LEARNING OUTCOMES

Knowledge

After completing this module, students will be able to:

1. Understand the concepts of engineering mechanics and dynamics.
2. Develop the motion design of mechanisms.
3. Explore the theory of dynamics problems and its applications.

Skills

After completing this module, students will be able to:

1. Develop skills in solving engineering mechanics and dynamic problems.
2. Apply the theory of Dynamics to motion design of mechanisms.
3. Derive the equation of motion of a dynamic system.
4. Solve dynamic problems of engineering mechanics through performing a project.
Teaching/Learning Strategies

- Lectures.
- Individual/Group Projects.
- Tutorials.
- Class Presentation.

Learning Materials

Useful Websites:

- http://www.xav.com
- http://www.eidosinteractive.com
- http://www.mdyn.com
- http://www.ams.org

Reference Text:


Supplementary Readings:


Assessment Scheme

- Weekly written Assignments (12 Home Assignments).
- Short written Quizzes (4 10-min. Quizzes).
- Class written Tests (2 1.5-hr Tests).
- Individual/Group Projects.
- Unseen written Mid-Term Exam (1.5-hr. Exam).
- Unseen written Final Exam (3-hr. Exam).

Assessment Pattern

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class participation</td>
<td>5%</td>
</tr>
<tr>
<td>Assignments</td>
<td>15%</td>
</tr>
<tr>
<td>Tests and Quizzes</td>
<td>20%</td>
</tr>
<tr>
<td>Unseen Mid-term Exam</td>
<td>20%</td>
</tr>
<tr>
<td>Unseen Final Exam</td>
<td>40%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Learning Unit Contact Hours

<table>
<thead>
<tr>
<th>Component</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lectures</td>
<td>3 hrs/week</td>
</tr>
<tr>
<td>Tutorials</td>
<td>1.5 hrs/week</td>
</tr>
<tr>
<td>Total class contact hours</td>
<td>63 hrs/semester</td>
</tr>
<tr>
<td>Total self study hours</td>
<td>45 hrs/semester</td>
</tr>
<tr>
<td>Total study hours</td>
<td>108 hrs/semester</td>
</tr>
</tbody>
</table>

Module Leader

Staff
AIMS
This module is designed to provide students with an understanding of chemical fundamentals of air pollution, water pollution, water treatment, and electrochemistry. Chemical Processes in several industries such as ceramics industry, petroleum industry, cement industry, polymers industry and glass industry.

SYLLABUS

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Pollution</td>
</tr>
<tr>
<td>Water Pollution</td>
</tr>
<tr>
<td>Water Treatment</td>
</tr>
<tr>
<td>Electrochemistry</td>
</tr>
<tr>
<td>Chemical Processes in Petroleum Industry</td>
</tr>
<tr>
<td>Chemical Processes in Cement Industry</td>
</tr>
<tr>
<td>Chemical Processes in Polymers Industry</td>
</tr>
<tr>
<td>Chemical Processes in Glass Industry</td>
</tr>
<tr>
<td>Chemical Processes in Ceramics Industry</td>
</tr>
</tbody>
</table>

LEARNING OUTCOMES

Knowledge
After completing this module, students will be able to:
1. Analyse the chemical processes used in various industries.
2. Understand the basic principles of Petroleum, cement, polymers, glass and ceramics industries.

Skills
After completing the module, students will be able to:
1. Apply skills in various techniques for solving air and water pollution.
2. Demonstrate the electrochemistry phenomena and indicate the characteristics of corrosion.

Teaching/Learning Strategies
- Lectures
- Tutorials
- Laboratories
- Projects
Learning Materials

Useful Websites:
- http://www.wiley-vch.de
- http://www.ceic.unsw.edu.au

Reference Texts:

Supplementary Readings:

Assessment Scheme
- Weekly Assignments.
- Tests and Quizzes.
- Projects and Reports.
- Laboratory Final Test.
- Unseen Written Mid-Term Exam.
- Unseen Written Final-Exam.

Assessment Pattern

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignments</td>
<td>10 %</td>
</tr>
<tr>
<td>Tests and Quizzes</td>
<td>10 %</td>
</tr>
<tr>
<td>Laboratory Test</td>
<td>10 %</td>
</tr>
<tr>
<td>Term Projects and Reports</td>
<td>10 %</td>
</tr>
<tr>
<td>Unseen Mid-Term Exam</td>
<td>20 %</td>
</tr>
<tr>
<td>Unseen Final Exam</td>
<td>40 %</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100 %</strong></td>
</tr>
</tbody>
</table>

Learning Unit Contact Hours

- Lectures: 3 hrs / week
- Tutorials: 1.5 hrs / week
- Laboratories: 1.5 hrs / week
- Total class contact hours: 84 hrs / semester
- Total self study hours: 60 hrs / semester
- Total study hours: 144 hrs / semester

Module Leader

Staff
Aims

This module is designed to provide freshmen students with an understanding of the traditional machine tools used in forming and machining processes: Turning, milling, grinding, drilling, boring, shaping, planning, shearing, bending, and rolling machines, as well as welding and casting equipment, wood working, and polymeric machines. An extensive coverage of health and safety into workshop practice, focusing on hazards control, safety precautions, and industrial hygiene, to develop a responsible awareness of hazards.

Syllabus

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health and Safety at work, Workshop Accidents. Electrical Hazards. Fire Protections</td>
</tr>
<tr>
<td>Workshop Measuring Equipment.</td>
</tr>
<tr>
<td>Turning machines and their elements, and cutting tools.</td>
</tr>
<tr>
<td>Milling machines and their elements, and cutters.</td>
</tr>
<tr>
<td>Grinding machines and their elements, and grinding wheels.</td>
</tr>
<tr>
<td>Drilling and Boring machines and their elements, and cutting tools.</td>
</tr>
<tr>
<td>Shaping and Planning machines and their elements, and cutting tools.</td>
</tr>
<tr>
<td>Shearing, Bending and Rolling machines.</td>
</tr>
<tr>
<td>Welding Equipment and related tools, and Electrical Connections.</td>
</tr>
<tr>
<td>Foundary Furnaces and Casting Equipment.</td>
</tr>
<tr>
<td>Wood working machines and related tools.</td>
</tr>
<tr>
<td>Pressing, Blowing, and Extrusion of polymeric machines.</td>
</tr>
</tbody>
</table>

Learning Outcomes

Knowledge

After completing this module, students will be able to:

1. Recognize various machine tools used in machining and forming processes.
2. Acquire knowledge of the various polymeric machines.
3. Become familiar with industrial health hazards and hygiene, as well as the means of safety precautions.

Skills

After completing this module, students will be able to:

1. Operate various machines in the workshop.
2. Develop awareness of hazards, safety, and industrial hygiene at work environment is created.
Teaching/Learning Strategies
- Lectures.
- Tutorials.
- Workshops.
- Factory Visits.

Learning Materials

Hardware Requirements:
- Various machine tools in the University workshops.
- Manufacturing Processes Video Tapes.

Useful Websites
- http://www.xtend.co.nz
- http://www.infopeople.org

Reference Text:

Supplementary Readings:

Assessment Scheme
- Weekly written Assignments (8 Team Reports).
- Short written Quizzes (4 10-min. Quizzes).
- Unseen written Mid-Term Exam (1.5-hr. Exam).
- Oral Practical Exam (at the end of the semester)
- Unseen written Final-Exam (3-hr. Exam).

Assessment Pattern
- Class Participation 10%
- Assignments (Team Reports) 10%
- Tests and Quizzes 15%
- Individual Oral Practical Test 5%
- Unseen Mid-Term Exam 20%
- Unseen Final Exam 40%

Total 100%

Learning Unit Contact Hours
- Lectures 3 hrs/week
- Workshops 1.5 hrs/week
- Total class contact hours 63 hrs/semester
- Total self study hours 45 hrs/semester
- Total study hours 108 hrs/semester

Module Leader
Staff
Module Code : ENG 166
Title : Technical English Writing
Level : 1
Credit Hours : 3
Prerequisites : ENG 156

AIMS
This module aims to improve formal reports and business proposals writing, note taking and oral presentation skills. Help students to acquire study skills that would facilitate any research process. Teach students types of business writing, such as reports, business letters, memos, and curriculum vitae. There is also a focus on reading and listening skills and learning vocabulary in context.

SYLLABUS

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using Grammatical Information in Paraphrasing</td>
</tr>
<tr>
<td>Paraphrasing</td>
</tr>
<tr>
<td>Organization Analysis</td>
</tr>
<tr>
<td>Organization Analysis + Outline</td>
</tr>
<tr>
<td>Questionnaire</td>
</tr>
<tr>
<td>Memo Writing</td>
</tr>
<tr>
<td>Writing a Curriculum Vitae</td>
</tr>
<tr>
<td>News Releases</td>
</tr>
<tr>
<td>Writing Business Letters</td>
</tr>
<tr>
<td>Writing Business Reports</td>
</tr>
<tr>
<td>Writing Technical Reports and Giving Presentations</td>
</tr>
</tbody>
</table>

Learning Outcomes

Knowledge and Understanding

After completing this module, students will be able to demonstrate knowledge and understanding of:
1. The texts they need to incorporate in the reports.
2. Graphical and visual information.

Intellectual Skills

After completing this module, students will be able to:
1. Paraphrase, summarize and analyze the texts they need to incorporate in the reports.
2. Write clear and effective curriculum vitae, business letters and memos.
3. Outline and administer questionnaires.
4. Analyze the quantitative and qualitative data obtained from the questionnaires.
5. Integrate graphical, visual and statistical information into the reports.
6. Produce a report with an outline and a simplified “Reference” page.
7. Present the reports using slides or computer software.

**Practical and Professional Skills**

*After completing this module, students will be able to:*
1. Paraphrase, summarize and analyze the text they need to incorporate in their reports.
2. Write clear and effective curriculum vitae, business letters and memos.
3. Present their reports using slides or computer software.
4. Produce a report with an outline and simplified "reference" page.

**General and Transferable Skills**

*After completing this module, students will be able to:*
1. Analyze the text they need to incorporate in their reports,
2. Identify graphical and visual information.

<table>
<thead>
<tr>
<th>Teaching/Learning Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lectures.</td>
</tr>
<tr>
<td>Tutorials.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Learning Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Useful Websites</td>
</tr>
<tr>
<td><a href="http://www.better.english.com">http://www.better.english.com</a></td>
</tr>
<tr>
<td><a href="http://www.eslcafe.com">http://www.eslcafe.com</a></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reference Text</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Assessment Scheme</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weekly assignment (24 assignments).</td>
</tr>
<tr>
<td>Individual term project.</td>
</tr>
<tr>
<td>Unseen Mid-Term Exam.</td>
</tr>
<tr>
<td>Unseen Final-Exam.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Assessment Pattern</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class participation 5%</td>
</tr>
<tr>
<td>Assignments 5%</td>
</tr>
<tr>
<td>Quizzes 10%</td>
</tr>
<tr>
<td>Portofolio 20%</td>
</tr>
<tr>
<td>Unseen Mid-Term Exam 20%</td>
</tr>
<tr>
<td>Unseen Final Exam 40%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Learning Unit Contact Hours</td>
</tr>
<tr>
<td>Lectures</td>
<td>1.5 hrs / week</td>
</tr>
<tr>
<td>Laboratories</td>
<td>3 hrs / week</td>
</tr>
<tr>
<td>Total class contact hours</td>
<td>63 hrs / semester</td>
</tr>
<tr>
<td>Total self study hours</td>
<td>45 hrs / semester</td>
</tr>
<tr>
<td>Total study hours</td>
<td>108 hrs / semester</td>
</tr>
</tbody>
</table>

**Module Leader**

Dr. A. Hafez
200's LEVEL MODULES
AIMS
This module aims to develop a broad perspective for students concerning the fundamental factors that shape and affect architectural Design. It presents special rules and compositions which aid in developing students’ basic communication skills. Students are introduced to the design fundamentals and architectural principles such as: order, proportion, balance, symmetry, unity, etc. Small projects are given to explore functional, aesthetic, and structural issues.

SYLLABUS

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factors affecting Architectural Design.</td>
</tr>
<tr>
<td>Human activities-Body measurement- ergonomics</td>
</tr>
<tr>
<td>Principles of form composition: order, proportion, balance, symmetry, etc.</td>
</tr>
<tr>
<td>Horizontal and vertical circulation elements</td>
</tr>
<tr>
<td>Principles of space characteristics</td>
</tr>
<tr>
<td>Exercises on enclosure, openness, articulation, continuity</td>
</tr>
<tr>
<td>Small projects with a given programme, specific requirements are to be submitted weekly for correction and grading.</td>
</tr>
<tr>
<td>Main project</td>
</tr>
</tbody>
</table>

Project Examples
- Bus stop shed
- Guardhouse at Entrance gate to residential compound
- Beach Chalet

Learning Outcomes
Knowledge and Understanding
After completing this module, students will be able to demonstrate knowledge and understanding of:
1. The principles and factors that shape Architectural Design.
2. The basic spatial compositions.

Intellectual Skills
After completing this module, students will be able to:
1. Relate principles and methods of design to various approaches and phases of the design process.
2. Recognize the relationship between forms and spaces and their organization.

Practical and Professional Skills
After completing this module, students will be able to:
1. Use communication skills effectively.
2. Enhance drafting, architectural presentation and physical models techniques.

Teaching/Learning Strategies
- Studios.
- Class presentation.
- Individual projects.
- Field trips.
- Design Sketch.

### Learning Materials

#### Useful Websites
- [http://www.archnet.org](http://www.archnet.org)
- [http://www.greatbuilding.com](http://www.greatbuilding.com)
- [http://www.architecture.com](http://www.architecture.com)

#### Reference Text:
- Ching, F. Architecture: Form, Space and Order, van Nostrand Reinhold Co., New York, 1979

#### Supplementary Readings:
- Contemporary Architecture, Architectural Digest.

### Assessment Scheme

- Weekly graphical assignments
- One-day architecture sketch design.
- Term project.
- Jury oral presentation
- Unseen graphical Final Exam.

#### Assessment Pattern

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class participation</td>
<td>5%</td>
</tr>
<tr>
<td>Group research</td>
<td>5%</td>
</tr>
<tr>
<td>Term projects</td>
<td>50%</td>
</tr>
<tr>
<td>Unseen Final Exam</td>
<td>40%</td>
</tr>
</tbody>
</table>

Total: 100%

### Learning Unit Contact Hours

<table>
<thead>
<tr>
<th>Component</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Studios</td>
<td>4.5 hrs/week</td>
</tr>
<tr>
<td>Lectures</td>
<td>1.5 hrs/week</td>
</tr>
<tr>
<td>Total class contact</td>
<td>84 hrs/semester</td>
</tr>
<tr>
<td>Total self study</td>
<td>60 hrs/semester</td>
</tr>
<tr>
<td>Total study hours</td>
<td>144 hrs/semester</td>
</tr>
</tbody>
</table>

### Module Leader

Staff
Module Code : ASE 252
Title : Architectural History & Theories I
Level : 2
Credit Hours : 3
Prerequisites : None

AIMS
This module is designed to provide students with coverage of the broad survey of buildings from Ancient Egypt, Mesopotomia, Greek and Roman traditional civilizations. It discusses the various systems employed to order architectural compositions. It allows Students to develop an appreciation of the relationship between architecture and other aspects of culture, and enables them to develop an understanding of the built environment, helping them to make informed contributions to current debates on architecture.

SYLLABUS

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influences on Ancient Egyptian Architecture.</td>
</tr>
<tr>
<td>Temple Architecture.</td>
</tr>
<tr>
<td>Symbolism and Intent of Ancient Egyptian Architecture</td>
</tr>
<tr>
<td>Mesopotamian Architecture</td>
</tr>
<tr>
<td>Ziggurats and Palaces.</td>
</tr>
<tr>
<td>Greek Philosophy.</td>
</tr>
<tr>
<td>Classical Greek Architecture, Greek Temples.</td>
</tr>
<tr>
<td>Overview on Greek Symbolism.</td>
</tr>
<tr>
<td>The Architecture of Ancient Rome.</td>
</tr>
<tr>
<td>Roman Architecture and Styles.</td>
</tr>
<tr>
<td>The Roman Forum.</td>
</tr>
<tr>
<td>Town Planning in Ancient Rome.</td>
</tr>
<tr>
<td>Roman Cultural Philosophy.</td>
</tr>
</tbody>
</table>

LEARNING OUTCOMES

Knowledge and Understanding
After completing this module, students will be able to demonstrate knowledge and understanding of:
1. The classification and distinguishing features of particular building types that are specific to certain ancient civilisations.
2. The concepts of construction methods and structural techniques associated with buildings of a certain age.
3. The architectural elements comprising designs of buildings representative of specific civilizations.
4. The social, economical, cultural, political & environmental aspects that helped shape the architecture of a certain age.

Intellectual Skills
After completing this module, students will be able to:
1. Identify the elements, materials and methods of building of each civilisation and style.

**Practical and Professional Skills**

After completing this module, students will be able to:

1. Identify and distinguish between the different architectural styles of ancient civilizations.
2. Prepare research and explore further in the historical and theoretical issues relevant to architecture.
3. Use appropriate techniques to specify different styles.
4. Determine the requirements for a range of building types and balance between the constraints imposed by society, organisations and technology to develop or assess a project’s design.

**Teaching/Learning Strategies**

- Lectures.
- Tutorials.
- Field trips.
- Group/individual projects.

**Learning Materials**

**Software Requirements:**

- Computer Data Shows on the great Architectural monuments of Different Periods.

**Videos / Slides:**

- Slides and Videos on the Historical Architectural Monuments of the World.

**Useful Websites**

- [http://www.greatbuildings.com](http://www.greatbuildings.com)
- [http://www.archnet.org](http://www.archnet.org)

**Reference Text:**


**Supplementary Readings:**


**Assessment Scheme**

- Written quizzes comprising definitions, true and false, multiple choice choice and essay questions (3 Quizzes).
- Class written tests (Two 1.5 hr. test)
- Individual term paper (1 paper)
- Group term research, the first research to be submitted before the mid-term exam and the second to be submitted at the end of the semester.

**Assessment Pattern**

<table>
<thead>
<tr>
<th>Assessment Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class participation</td>
<td>5%</td>
</tr>
<tr>
<td>Quizzes</td>
<td>10%</td>
</tr>
<tr>
<td>Tests</td>
<td>5%</td>
</tr>
<tr>
<td>Projects</td>
<td>20%</td>
</tr>
<tr>
<td>Unseen Mid-Term Exam</td>
<td>20%</td>
</tr>
<tr>
<td>Unseen Final Exam</td>
<td>40%</td>
</tr>
</tbody>
</table>

| Total                            | 100%       |
### Learning Unit Contact Hours

- Lectures: 3 hrs / week
- Tutorials: 1.5 hrs / week
- Total class contact hours: 63 hrs / semester
- Total self study hours: 45 hrs / semester
- Total study hours: 108 hrs / semester

### Module Leader

Staff
AIMS
This module is designed to help students acquire the artistic and architectural sense of freehand drawing and rendering skills and techniques. It also includes the principles of form composition (order, proportion, balance … etc) and the use of various drawing media such as pencils and charcoal. Additionally, the fundamentals of shade and shadow and perspective viewing of basic geometric forms are also presented. The concepts of vanishing points and the principles of perspective drawing are introduced. The module covers all types of perspective from one vanishing point parallel perspectives to two vanishing point perspectives and bird’s eye view.

SYLLABUS

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Subjects of Graphic Skills</td>
</tr>
<tr>
<td>Principles of Form Composition using 2-D Drawings and 3-D Models.</td>
</tr>
<tr>
<td>Principles and Fundamentals of Shade and Shadow.</td>
</tr>
<tr>
<td>Projection of Shade and Shadow on Orthogonal Drawings.</td>
</tr>
<tr>
<td>Different Methods of Shade and Shadow Presentation.</td>
</tr>
<tr>
<td>Different Drawing Media.</td>
</tr>
<tr>
<td>Principles of Perspective Drawing</td>
</tr>
<tr>
<td>One Vanishing Point Perspective</td>
</tr>
<tr>
<td>Two Vanishing Points Perspective</td>
</tr>
<tr>
<td>Rendering Techniques of Perspectives</td>
</tr>
</tbody>
</table>

LEARNING OUTCOMES

Knowledge and Understanding
After completing this module, students will be able to demonstrate knowledge and understanding of:
1. The fundamentals of basic forms.
2. The basic fundamentals of shade and shadow.
3. The principles and methods of perspective drawing.

Intellectual Skills
After completing this module, students will be able to:
1. Interpret different graphical presentation types.
2. Extend their presentation abilities to include manually drawn interior and exterior perspectives, together with choosing best angles for suggested vanishing points and lighting sources.

Practical and Professional Skills
After completing this module, students will be able to:
1. Practice different graphical presentation types.
2. Manually draw interior and exterior perspectives.

General and Transferable Skills
After completing this module, students will be able to:
1. Develop graphic skills.
2. Apply the methods of drawing perspectives.

**Teaching/Learning Strategies**
- Lectures.
- Tutorials.
- Design studios.
- Class presentation.

**Learning Materials**

**Useful Websites**
- [http://www.architecturalgraphics.co.uk](http://www.architecturalgraphics.co.uk)
- [http://www.wiley.com](http://www.wiley.com)
- [http://www.austincc.edu/edg/arch.html](http://www.austincc.edu/edg/arch.html)

**Reference Text:**
- Lockard, K., Design Drawing, Pepper publishing Co., USA, (1986)

**Supplementary Readings:**
- Architectural Record, Architectural Review

**Assessment Scheme**
- Weekly individual graphical assignments (12 assignments).
- One-day sketches.
- Unseen graphical Mid-Term Exam.
- Unseen graphical Final-Exam.

**Assessment Pattern**
- Class participation 5 %
- Assignments 10 %
- One day sketch 5 %
- Individual projects 10 %
- Term Project 10%
- Unseen Mid-Term Exam 20 %
- Unseen Final Exam 40 %

<table>
<thead>
<tr>
<th>Total</th>
<th>100%</th>
</tr>
</thead>
</table>

**Learning Unit Contact Hours**
- Studios 3 hrs / week
- Lectures 1.5 hrs / week
- Total class contact hours 63 hrs / semester
- Total self study hours 45 hrs / semester
- Total study hours 108 hrs / semester

**Module Leader**
- Staff
AIMS
This module is designed to introduce students to the fundamentals of surveying. It teaches the concepts of translating drawings into real life by determining positions and plotting them and vice versa. It includes the classifications of surveying and coordinate systems, units, scales and maps, linear distance measurements (taping, stadia survey and EDM measurements), angular measurements and uses of theodolites, traverse survey, levelling surveys, areas and volumes, electronic surveying measurement and topographic surveying.

SYLLABUS

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surveying Fundamentals.</td>
</tr>
<tr>
<td>Coordinate Systems, Units, Scales and Maps.</td>
</tr>
<tr>
<td>Linear Distance Measurements.</td>
</tr>
<tr>
<td>Angular Measurements.</td>
</tr>
<tr>
<td>Traverse Surveys.</td>
</tr>
<tr>
<td>Leveling Surveys.</td>
</tr>
<tr>
<td>Areas and Volumes.</td>
</tr>
<tr>
<td>Electronic Measurements and Topographic Surveying.</td>
</tr>
<tr>
<td>Surveying Project.</td>
</tr>
</tbody>
</table>

Learning Outcomes

Knowledge and Understanding
After completing this module, students will be able to demonstrate knowledge and understanding of:
1. The principles of surveying and their techniques.
2. Surveying problems and creating professional graphs and maps, both manually and using computer software.
3. The principles and techniques of various types of the most commonly used measurements.

Intellectual Skills
After completing this module, students will be able to:
1. Demonstrate knowledge, skills and attitudes needed to solve surveying problems.
2. Develop skills that could help improve his/her experience in using a variety of surveying and measuring instruments.

Practical and Professional Skills
After completing this module, students will be able to:
1. Use of measurement & surveying tools.
2. Understanding and measuring linear distance used during the construction process and site supervision.
General and Transferable Skills
After completing this module, students will be able to:
1. Communicate with peers and mentor.

Teaching/Learning Strategies
- Lectures.
- Tutorials.
- Laboratory.
- Team Projects.

Learning Materials
Useful Websites:
- http://www.nottingham.ac.uk/iessg
- http://www.pvpubs.com
- http://www.ices.org.uk

Reference Text:

Supplementary Readings:

Assessment Scheme
- Weekly written assignment (4 assignments).
- Short written quizzes (3 quizzes).
- Laboratory tests and fields surveying.
- Unseen written Mid-Term Exam.
- Unseen written Final-Exam.

Assessment Pattern
- Class participation 5%
- Tests and quizzes 15%
- Projects 20%
- Mid-Term Exam 20%
- Unseen Final Exam 40%

Total 100%

Learning Unit Contact Hours
- Lectures 3 hrs/week
- Total class contact hours 42 hrs/semester
- Total self study hours 30 hrs/semester
- Total study hours 72 hrs/semester

Module Leader
Dr. H. Soliman
AIMS
This course is designed to give students the technical knowledge of the testing of materials static loadings (compression, tension, bending and shear). It also covers the structural use of concrete and its manufacturing as well as the design mix. Quality control of both structural and non-structural materials, compliance with standard specifications and codes are also covered.

SYLLABUS

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relation Between Stress and Strain.</td>
</tr>
<tr>
<td>Concrete Ingredients, Types and Manufacture.</td>
</tr>
<tr>
<td>Concrete Uses and Advantages.</td>
</tr>
<tr>
<td>Properties and Testing of Fresh Concrete.</td>
</tr>
<tr>
<td>Mix-Design of Concrete.</td>
</tr>
<tr>
<td>Properties and Testing of Hardened Concrete (Compression &amp; Tension).</td>
</tr>
<tr>
<td>Testing of Hardened Concrete (Bending, Bond, Tension and Compression Tests).</td>
</tr>
<tr>
<td>Structural Steel Properties and Testing.</td>
</tr>
<tr>
<td>Volumetric Changes (Creep, Shrinkage and Temperature) and Durability of Concrete.</td>
</tr>
<tr>
<td>Quality Control Testing for Different Project Stages According to Code Requirements.</td>
</tr>
</tbody>
</table>

Learning Outcomes

Knowledge and Understanding
After completing this module, students will be able to demonstrate knowledge and understanding of:
1. Mechanical properties of building materials, their use and methods of testing.
2. Code requirements for quality control to improve the quality of the built environment efficiently.

Intellectual Skills

After completing this module, students will be able to:

1. Manage available resources & buildings materials.

Practical and Professional Skills
After completing this module, students will be able to:

1. Experiment code requirements for quality control to improve the quality of the built environment efficiently.
General and Transferable Skills

After completing this module, students will be able to:
1. Knowledge of building materials and their different users.

Teaching/Learning Strategies
- Lectures.
- Tutorials.
- Laboratory.
- Field Trips.

Learning Materials

Useful Websites:
- [http://www.eels.lub.lu.se/ei/42.html](http://www.eels.lub.lu.se/ei/42.html)
- [http://www.kenken.go.jp/englishlcontents/publications](http://www.kenken.go.jp/englishlcontents/publications)

Reference Text:

Supplementary Readings:
- The Egyptian Code of Design and Execution of Concrete.
- The Egyptian Building Material Code.

Assessment Scheme
- Weekly written assignments (8 Assignments).
- Short written quizzes (Four 10-min. Quizzes).
- Unseen written Mid-Term Exam.
- Unseen written Final Exam.

Assessment Pattern
- Class participation 10%
- Assignments 15%
- Tests and quizzes 15%
- Unseen Mid-Term Exam 20%
- Unseen Final Exam 40%

<table>
<thead>
<tr>
<th>Total</th>
<th>100%</th>
</tr>
</thead>
</table>

Learning Unit Contact Hours
- Lectures 3 hrs / week
- Laboratories 1.5 hrs / week
- Total class contact hours 63 hrs / semester
- Total self study hours 45 hrs / semester
- Total study hours 108 hrs / semester

Module Leader
Eng. E. Helal
Module Code: ENG 256
Title: Research English Writing
Level: 2
Credit Hours: 3
Prerequisites: ENG 166

AIMS
This module aims to prepare students for writing research papers and project reports and books. Emphasize research skills necessary for writing research papers. Provide a survey of different articles on specialized topics and Train students on rhetorical awareness beyond traditional composition. Intensive writing practice with a thorough guidance on using references and citing sources.

SYLLABUS

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Introduction and instructions explaining objectives, assignments and grading system</td>
</tr>
<tr>
<td>• Library Skills and Classification Systems</td>
</tr>
<tr>
<td>Reading: Unit 1</td>
</tr>
<tr>
<td>• Thesis Statement</td>
</tr>
<tr>
<td>Reading: Unit 2</td>
</tr>
<tr>
<td>• Outlining (Submit research paper outline)</td>
</tr>
<tr>
<td>Reading: Unit 3</td>
</tr>
<tr>
<td>• Summary Writing</td>
</tr>
<tr>
<td>Reading: Unit 4</td>
</tr>
<tr>
<td>• Organization Analysis</td>
</tr>
<tr>
<td>• Application of Summary Writing (Source I)</td>
</tr>
<tr>
<td>• APA in-text citations</td>
</tr>
<tr>
<td>• Organization Analysis</td>
</tr>
<tr>
<td>• Application of Summary Writing (Source II)</td>
</tr>
<tr>
<td>Reading: Unit 5</td>
</tr>
<tr>
<td>• Fallacies</td>
</tr>
<tr>
<td>Reading: Unit 6</td>
</tr>
<tr>
<td>• Fallacies (Cont.)</td>
</tr>
<tr>
<td>Reading: Unit 7</td>
</tr>
<tr>
<td>• APA Style Sheet</td>
</tr>
<tr>
<td>• Application of Summary Writing (Source III)</td>
</tr>
<tr>
<td>• APA Style Sheet (Cont.)</td>
</tr>
<tr>
<td>• Application of Summary Writing (Source IV)</td>
</tr>
<tr>
<td>Reading: Unit 8</td>
</tr>
<tr>
<td>• Application of Summary Writing (Source V)</td>
</tr>
<tr>
<td>• Submitting Research Paper and Giving Oral Presentations</td>
</tr>
</tbody>
</table>

Learning Outcomes

Knowledge and Understanding
After completing this module, students will be able to demonstrate knowledge and understanding of:
4. Thesis statements and developmental functions of texts that students analyze.
5. Fallacies in the texts they analyze.
6. Different library classification systems and card catalogs.

Intellectual Skills

After completing this module, students will be able to:
3. Employ logical arguments.
4. Outline and identify key elements of problems and choose appropriate methods for the resolution in a considered manner.

**Practical and Professional Skills**

After completing this module, students will be able to:
1. Write outlines and summaries.
2. Write a research paper using correct in-text citations according to the APA style.

**General and Transferable Skills**

After completing this module, students will be able to:
3. Develop logical arguments.
4. Present their papers using slides or computer software.

**Teaching/Learning Strategies**
- Lectures.
- Tutorials.

**Learning Materials**

**Useful Websites**
- http://www.better.english.com
- http://www.eslcafe.com

**Reference Text**

**Assessment Scheme**
- Weekly assignment (24 assignments).
- Individual term project.
- Unseen Mid-Term Exam.
- Unseen Final-Exam.

**Assessment Pattern**
- Class participation 5%
- Assignments 5%
- Quizzes 10%
- Portofolio 20%
- Unseen Mid-Term Exam 20%
- Unseen Final Exam 40%

<table>
<thead>
<tr>
<th>Total</th>
<th>100%</th>
</tr>
</thead>
</table>

**Learning Unit Contact Hours**
- Lectures 3 hrs / week
- Tutorials 1.5 hrs / week
- Total class contact hours 63 hrs / semester
- Total self study hours 45 hrs / semester
- Total study hours 108 hrs / semester

**Module Leader**
- Dr. E. Arafa
Module Code : ASE 261
Title : Architectural Design II
Level : 2
Credit Hours : 4
Prerequisites : ASE 251

AIMS
This module continues the study of the development of design principles from the previous experience. Space definition is supplemented with cultural, human and local contextual needs. Small projects are given to explore functional, aesthetic, and structural issues.

SYLLABUS

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Series of Related Lectures Presentations and Site Visits will be</td>
</tr>
<tr>
<td>Scheduled.</td>
</tr>
<tr>
<td>First Project and Distribution of the Weekly Requirements and Submission Schedule. Final Presentation and Jury is Determined and Students are Informed with all Details (6 Weeks Period).</td>
</tr>
<tr>
<td>Second Project is Introduced with a Detailed Weekly Task Schedule (8 week period).</td>
</tr>
</tbody>
</table>

Project Examples:
- Fire Station.
- Kindergarten.
- Farm House.
- Car Showroom.
- Community Clinic.
- Exhibition Hall.
- Restaurants / Coffee Shop
- Single or Two Storey Dwelling Units.
- Two Storey Villas.

Learning Outcomes

Knowledge and Understanding
After completing this module, students will be able to demonstrate knowledge and understanding of:
3. Function, space, form, circulation and context, within the scale of studio project.
4. Design principles and space organization and parameters.

Intellectual Skills
After completing this module, students will be able to:
3. Introduce conceptual spatial thinking in design.

Practical and Professional Skills
After completing this module, students will be able to:
3. Practice model making and building.
4. Enhance drafting and architectural presentation and design.

Teaching/Learning Strategies
- Studios.
- Class presentation.
- Individual projects.
- Field trips.
- Design Sketch.

**Learning Materials**

**Useful Websites**

- [http://www.archnet.org](http://www.archnet.org)
- [http://www.greatbuilding.com](http://www.greatbuilding.com)
- [http://www.architecture.com](http://www.architecture.com)

**Reference Text:**


**Supplementary Readings:**

- Contemporary Architecture, Architectural Digest.

**Assessment Scheme**

- Weekly graphical assignments
- One-day architecture sketch design.
- Term project.
- Final Submission Jury
- Unseen graphical Final Exam.

**Assessment Pattern**

- Class participation 5 %
- Group research 5 %
- Design development including 50 %
  Sketches, reviews, final submission and jury
- Unseen Final Exam 40 %

<table>
<thead>
<tr>
<th>Total</th>
<th>100%</th>
</tr>
</thead>
</table>

**Learning Unit Contact Hours**

- Studios 4.5 hrs / week
- Lectures 1.5 hrs / week
- Total class contact hours 84 hrs / semester
- Total self study hours 60 hrs / semester
- Total study hours 144 hrs / semester

**Module Leader**

Staff
Module Code: ASE 262  
Title: Architectural History and Theories II  
Level: 2  
Credit Hours: 3  
Prerequisites: ASE 252

AIMS
This module is designed to give students a broad survey of major monuments and architectural development in the Eastern and Western Christian traditions. It includes the Early Christian, Byzantine, Romanesque and Gothic periods. Furthermore, it outlines the shift from the buildings of the Middle Ages to those of the Renaissance and Baroque. These lectures are essential for understanding the architectural revivals of the 18th and 19th centuries.

SYLLABUS

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Christian Beliefs.</td>
</tr>
<tr>
<td>Early Christian Architecture.</td>
</tr>
<tr>
<td>Early Christian Architecture and Styles.</td>
</tr>
<tr>
<td>Byzantine Architecture and Details.</td>
</tr>
<tr>
<td>Romanesque in Italy.</td>
</tr>
<tr>
<td>Romanesque in Germany.</td>
</tr>
<tr>
<td>Romanesque in France.</td>
</tr>
<tr>
<td>Gothic Architecture in Different Regions.</td>
</tr>
<tr>
<td>Italian Renaissance.</td>
</tr>
<tr>
<td>French Renaissance.</td>
</tr>
<tr>
<td>English Renaissance.</td>
</tr>
<tr>
<td>Baroque in France.</td>
</tr>
</tbody>
</table>

Learning Outcomes

Knowledge and Understanding
After completing this module, students will be able to demonstrate knowledge and understanding of:
1. Certain building types that are particularly specific to certain civilizations
2. Social, cultural, political & environmental parameters that lie behind the end product.

Intellectual Skills
After completing this module, students will be able to:
1. Research and explore further in the historical and theoretical issues relevant to architecture.

Practical and Professional Skills
After completing this module, students will be able to:
1. Determine the requirements for a range of building types and balance between the constraints imposed by society, organizations and technology to develop or assess a project’s design.
General and Transferable Skills
After completing this module, students will be able to:
1. Develop the knowledge that will help their continuing development as lifelong learners.

Teaching/Learning Strategies
- Lectures.
- Tutorials.
- Field trips.
- Team projects.

Learning Materials
Software Requirements:
- Computer Data Shows on historical architectural monuments.

Videos / Slides:
- Videos and Slides on different eras of architectural history.

Useful Websites:
- http://www.greatbuildings.com
- http://www.archnet.org

Reference Text:

Supplementary Readings:

Assessment Scheme
- Graphical sketches of real buildings in different periods ( 6 Sketches).
- Written quizzes, comparison of definitions, true or false, multiple choice and essay questions ( 3 Quizzes ).
- Class written tests. (2 tests)
- Individual term paper. (2 papers)

Assessment Pattern
- Class participation 5 %
- Graphical sketches 5 %
- Quizzes 20 %
- Term papers 10 %
- Unseen Mid-Term Exam 20 %
- Unseen Final Exam 40 %

Total 100%

Learning Unit Contact Hours
- Lectures 3 hrs / week
- Tutorials 1.5 hrs / week
- Total class contact hours 63 hrs / semester
- Total self study hours 45 hrs / semester
- Total study hours 108 hrs / semester

Module Leader
Staff
Module Code: GSE 263  
Title: Environmental Control Systems  
Level: 2  
Credit Hours: 2  
Prerequisites: BSC 162

AIMS  
This module is designed to introduce students to the principles of designing for different climatic regions. Issues discussed are: natural conditions, climatic characteristics, and alternative solutions for human comfort and building protection against harsh conditions. Buildings, should relate not only to the climate and other environmental conditions in a given area, but also to the traditional way of life of its users. The module provides essentials for a clear understanding of the unique situation of designing in our region as well as the principles of designing with nature.

SYLLABUS

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Climate, Zones and Comfort.</td>
</tr>
<tr>
<td>Climatic Elements: Solar Radiation, Air Temperature, Wind, etc.</td>
</tr>
<tr>
<td>Characteristics of non-temperate Climates.</td>
</tr>
<tr>
<td>Climate and Comfort: Design Aids, Local Environment.</td>
</tr>
<tr>
<td>Design and Climate: Site Climate, Topography, Water, Vegetation, Windbreaks.</td>
</tr>
<tr>
<td>Orientation, Form, Structure, and Shade.</td>
</tr>
<tr>
<td>Glare and Daylight, Ventilation, Cooling and Wind Catchers.</td>
</tr>
<tr>
<td>Recommendations for Hot Climate Zones.</td>
</tr>
<tr>
<td>Regional Hazards: Condensation, Sand and Dust, Services.</td>
</tr>
<tr>
<td>Use of Technology, Local Building Materials.</td>
</tr>
<tr>
<td>Structures: Frames, Walls, Roofs, etc.</td>
</tr>
<tr>
<td>Solar Energy and Water Heating .</td>
</tr>
<tr>
<td>Water: Collection, Storage, and Purification.</td>
</tr>
</tbody>
</table>

LEARNING OUTCOMES

Knowledge and Understanding

After completing this module, students will be able to demonstrate knowledge and understanding of:

1. The various natural factors to be taken into consideration when designing buildings.
2. The principles of the different environmental systems & techniques.
3. The principles and methods of design for thermal comfort.
4. The renewable energy technologies and their applications in buildings.

Intellectual Skills

After completing this module, students will be able to:

1. Use simple analytical techniques to evaluate the environmental performance of design proposals.

1. Analyse the principles and methods of design for thermal comfort.
2. Use a variety of environmental systems and techniques in the design of buildings.

**Practical and Professional Skills**

*After completing this module, students will be able to:*

5. Apply renewable energy technologies in the design of buildings.
6. Assess a building’s thermal performance based on climatic data and micro-climatic conditions prior to its realization.

**General and Transferable Skills**

*After completing this module, students will be able to:*

1. Manage available resources efficiently.
2. Use environmental computer software programs in the analysis of a building’s thermal performance effectively.

**Teaching/Learning Strategies**

- Lectures.
- Class Presentations
- Tutorials.
- Term paper

**Learning Materials**

**Useful Websites:**

- [http://www.smartarch.com](http://www.smartarch.com)
- [http://www.designgrid.com](http://www.designgrid.com)
- [http://www.atdi.com](http://www.atdi.com)

**Reference Text:**


**Supplementary Readings:**

- Architectural Record Magazine, Arca Magazine.

**Assessment Scheme**

- Short written quizzes, comprised of definitions, true or false, and essay questions (4 Quizzes).
- Group term project, working as teams on a case study to collect information and present the findings (1 term Project).
- Unseen written Mid-Term Exam.
- Unseen written Final Exam.

**Assessment Pattern**

- Class participation 5%
- Tests and quizzes 15%
- Projects 20%
- Unseen Mid-Term Exam 20%
- Unseen Final Exam 40%

**Total 100%**

**Learning Unit Contact Hours**

- Studios 3 hrs / week
- Total class contact hours 42 hrs / semester
- Total self study hours 30 hrs / semester
- Total study hours 72 hrs / semester

**Module Leader**

Staff
Module Code : ASE 264
Title : Building Construction I
Level : 2
Credit Hours : 3
Prerequisites : None

AIMS
This module introduces students to the various methods and materials employed in constructing buildings. It discusses systematically and in sequence all the steps and operations which occur during construction. Accordingly, it prepares the student for what he/she might encounter in the future on the building site during site supervision.

SYLLABUS

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building Drawings and Construction Documents.</td>
</tr>
<tr>
<td>Site Analysis and Building Setting</td>
</tr>
<tr>
<td>Foundations</td>
</tr>
<tr>
<td>Walls: Brick, Masonry and Stone Construction.</td>
</tr>
<tr>
<td>Walls: Wood Construction.</td>
</tr>
<tr>
<td>Floors</td>
</tr>
<tr>
<td>Roofs</td>
</tr>
<tr>
<td>Moisture Intrusion and Protection</td>
</tr>
<tr>
<td>Stairs and Fittings: Concrete and Wood.</td>
</tr>
</tbody>
</table>

LEARNING OUTCOMES

Knowledge and Understanding
After completing this module, students will be able to demonstrate knowledge and understanding of:
1. The structure and construction systems, techniques and trends for the future of the building industry.
2. Current building materials and trends for the future of the building industry.

Intellectual Skills
After completing this module, students will be able to:
1. Devise their knowledge of construction techniques and building materials towards the production of more creative & futuristic design.

Practical and Professional Skills
After completing this module, students will be able to:
1. Recognize and choose among structure and construction systems and techniques and building materials.

General and Transferable Skills
After completing this module, students will be able to:
1. Know about the structure and construction systems and techniques.

Teaching/Learning Strategies
- Lectures.
- Tutorials.
- Field trips.
- Individual Projects.
Learning Materials

Software Requirements:
- Data shows for the latest technological methods in the field of building industry and types of used materials.

Videos / Slides:
- Videos and Slides of construction methods and building materials.

Useful Websites:
- [http://www.archzine.com](http://www.archzine.com)

Reference Text:

Supplementary Readings:

Assessment Scheme

- Graphical assignments (6 assignments).
- Written tests (Three 1.5hr. Tests).
- Individual term project (One project).

Assessment Pattern

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class participation</td>
<td>5 %</td>
</tr>
<tr>
<td>Assignments</td>
<td>10 %</td>
</tr>
<tr>
<td>Tests</td>
<td>5 %</td>
</tr>
<tr>
<td>Project</td>
<td>20 %</td>
</tr>
<tr>
<td>Unseen Mid-Term Exam</td>
<td>20 %</td>
</tr>
<tr>
<td>Unseen Final Exam</td>
<td>40 %</td>
</tr>
</tbody>
</table>

Total 100%

Learning Unit Contact Hours

<table>
<thead>
<tr>
<th>Component</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lectures</td>
<td>1.5 hrs / week</td>
</tr>
<tr>
<td>Studios</td>
<td>3 hrs / week</td>
</tr>
<tr>
<td>Total class contact hours</td>
<td>63 hrs / semester</td>
</tr>
<tr>
<td>Total self study hours</td>
<td>45 hrs / semester</td>
</tr>
<tr>
<td>Total study hours</td>
<td>108 hrs / semester</td>
</tr>
</tbody>
</table>

Module Leader

Staff
Module Code: CVL 265
Title: Structural Analysis
Level: 2
Credit Hours: 3
Prerequisites: CVL 255

AIMS
This module is designed to give students an overall view of the analysis of simple statically indeterminate structures. Analysis of shear and torsion stress using approximate approaches and formulate tabulated values, applications on determination of internal forces and deformed shapes of several types of structural systems.

SYLLABUS

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statically Indeterminate Beams.</td>
</tr>
<tr>
<td>Restrained and Continuous Beams.</td>
</tr>
<tr>
<td>Deflection of Beams.</td>
</tr>
<tr>
<td>Consistent Deformation and Applications.</td>
</tr>
<tr>
<td>Torsion of Circular Shaft.</td>
</tr>
<tr>
<td>Transfer Loading, Shear Flow, and Shear Center in Thin Walled Sections.</td>
</tr>
<tr>
<td>Trans Load, Shear Flow, Shear Center.</td>
</tr>
<tr>
<td>Application in solving Structures (Statically Indeterminate) for Internal Forces and Deformed Shapes of Statically Indeterminate Frames.</td>
</tr>
<tr>
<td>Statically Indeterminate Frames under Lateral Loading (Approximate Approaches).</td>
</tr>
<tr>
<td>Arched Girders.</td>
</tr>
<tr>
<td>Domes (Surface of Revolution).</td>
</tr>
<tr>
<td>Structural Dynamics.</td>
</tr>
</tbody>
</table>

Learning Outcomes

Knowledge
After completing this course students will be able to demonstrate knowledge and understanding of:

1. The shear & torsion stress to get the feeling of thin-wall structures, as well as membrane forces.

Intellectual Skills
After completing this module, students will be able to:

1. Recognise the deformed shapes of different statically determinant systems.
2. Calculate the values of internal forces in different conditions.

Practical and Professional Skills
After completing this course students will be able to:

1. Recognize the deformed shapes of different statically indeterminate systems.
General and Transferable Skills
After completing this course students will be able to:

1. Analyse simple statically indeterminant structures and differentiate between statically determinant and indeterminant structures.

Teaching/Learning Strategies
- Lectures.
- Tutorials.
- Individual project.

Learning Materials

Useful Websites:
- http://www.efn.org
- http://www.structsource.com
- http://www.eulerq.tripod.com

Reference Text:

Supplementary Readings:

Assessment Scheme
- Weekly graphical assignment (8 assignments).
- Short written quizzes (Four 10 min. Quizzes).
- Unseen written Mid-Term Exam.
- Unseen written Final-Exam.

Assessment Pattern
- Class participation 10%
- Assignments and projects 15%
- Tests and quizzes 15%
- Unseen Mid-Term Exam 20%
- Unseen Final Exam 40%

Total 100%

Learning Unit Contact Hours
- Lecture 3 hrs / week
- Laboratories 1.5 hrs / week
- Total class contact hours 63 hrs / semester
- Total self study hours 45 hrs / semester
- Total study hours 108 hrs / semester

Module Leader
Eng. E. Helal
MSA UNIVERSITY
FACULTY OF ENGINEERING
MODULE OUTLINE

Module Code: COM 266
Title: Architectural Computer Graphics I
Level: 2
Credit Hours: 3
Prerequisites: GSE 154 & COM 155

AIMS
This module is designed to enable students to use the basic means of image setting for architectural presentations. They will also be able to use presentation tools in architectural design studios and other modules, which require computer graphics, and to build their own architectural graphics library. Latest version of Adobe Photo-Shop, Archicad and Macromedia Freehand software will be used in this module.

SYLLABUS

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Knowledge of Photo-Shop Software and Software Preview.</td>
</tr>
<tr>
<td>Transfer of Vector Files to Computer Graphics Files and Raster Files:</td>
</tr>
<tr>
<td>Types (bmp, jpg, and tiff), Resolution and Sizes.</td>
</tr>
<tr>
<td>Shading in Plans, Elevations, Shade and Shadow.</td>
</tr>
<tr>
<td>Color Selection and Coding, Material and Objects Selection.</td>
</tr>
<tr>
<td>Background Selection of Buildings: Sky, Clouds, Pictures.</td>
</tr>
<tr>
<td>Image Settings: Contrast, Hue, and Crop.</td>
</tr>
<tr>
<td>Libraries Setting up: People, Trees, Cars, Furniture.</td>
</tr>
<tr>
<td>Insertion of Libraries to Files: Selection, Resolution, Sizes.</td>
</tr>
<tr>
<td>Graphic Representation of Plans: Furniture, Flooring, Accessories.</td>
</tr>
<tr>
<td>Filters: Use of Filters, Filters Effects, Filters Techniques.</td>
</tr>
<tr>
<td>Motion Presentation of Computer Graphics Files.</td>
</tr>
<tr>
<td>Multimedia Presentation Techniques.</td>
</tr>
<tr>
<td>Composition and Organization for Printing and Plotting Setup.</td>
</tr>
</tbody>
</table>

LEARNING OUTCOMES

Knowledge and Understanding
After completing this module, students will be able to demonstrate knowledge and understanding of:
1. Computer rendering and presentation graphics.
2. Design with basic architectural two and three dimensional presentation tools and techniques such as Adobe PhotoShop and Macromedia Freehand programs.

Intellectual Skills
After completing this module, students will be able to:
1. Apply the principles and methods of design and the various approaches to the design process.
2. Improve their abilities of selecting background and foreground elements, lights, shades, filters and effects.
3. Compare and practically choose among a variety of media, such as drawings, models, computers, photographic techniques, in the representation of architectural projects.

**Practical and Professional Skills**

*After completing this module, students will be able to:*
1. Use modern multimedia tools in the architectural presentation of projects.
2. Prepare drawings for printing and plotting.

**General and Transferable Skills**

*After completing this module, students will be able to:*
1. Distinguish computer rendering and presentation graphics.

**Teaching/Learning Strategies**
- Computer Laboratory.

**Learning Materials**

**Software Requirements:**
- Adobe Photo-Shop, Macromedia Freehand

**Useful Websites:**

**Reference Text:**
- Adobe Photo-Shop Manual.

**Supplementary Readings:**

**Assessment Scheme**
- Computer assignments (6 assignments).
- Individual term project
- Unseen graphical Mid-Term Exam.
- Unseen graphical Final-Exam.

**Assessment Pattern**
- Class participation 5%
- Computer assignments 15%
- Individual projects 20%
- Unseen Mid-Term Exam 20%
- Unseen Final Exam 40%

**Total** 100%

**Learning Unit Contact Hours**
- Lectures 1.5 hrs / week
- Laboratories 3 hrs / week
- Total class contact hours 63 hrs / semester
- Total self study hours 45 hrs / semester
- Total study hours 108 hrs / semester

**Module Leader**
Staff
300's LEVEL
MODULES
# MSA UNIVERSITY
## FACULTY OF ENGINEERING
## MODULE OUTLINE

<table>
<thead>
<tr>
<th>Module Code</th>
<th>ASE 351</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title</td>
<td>Architectural Design III</td>
</tr>
<tr>
<td>Level</td>
<td>3</td>
</tr>
<tr>
<td>Credit Hours</td>
<td>4</td>
</tr>
<tr>
<td>Prerequisites</td>
<td>ASE 261</td>
</tr>
</tbody>
</table>

## AIMS
This module is designed to give students a strong practical and theoretical base for the application of the analytical and conceptual approach to design whilst considering for materials and construction technology. Categorise the relationship between indoor & outdoor spaces; circulation, and structure.

## SYLLABUS

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Series of lectures by the Instructor and Guest Lecturers, on Topics such as Design Process, Construction Technology, and Structural Considerations.</td>
</tr>
<tr>
<td>First Project should extend over 6 Week Period and Includes Consideration for Analytical Approach of Similar Programmes to Design Circulation, and Construction Technology. Weekly Task Schedule should be given to the Students at the beginning of the Semester.</td>
</tr>
<tr>
<td>Second Design Project should be much more Complex and includes Site Consideration, indoor and outdoor Relationships, and Urban Contextual Analysis (this Project will take 8 Weeks).</td>
</tr>
</tbody>
</table>

Project Examples:
- Primary School.
- Motel (Coastal/Highway)
- 3-4 Storey Residential Building.
- Mid-Rise Office Building.
- Small Specialized Museum.
- Local Post Office.
- Community Library.

## Learning Outcomes

### Knowledge and Understanding
After completing this module, students will be able to demonstrate knowledge and understanding of:
1. Function, space, form, circulation and context, within the scale of studio project.
2. Design principles and the space organization space and parameters.

### Intellectual Skills
After completing this module, students will be able to:
1. Practice model making and building.
2. Enhance drafting and architectural presentation and design.
3. Arrange outdoor and indoor spaces in a meaningful fashion.
4. Introduce conceptual spatial thinking in design.

### Practical and Professional Skills
After completing this module, students will be able to:
1. The capability to analyze different environmental functional aspects that control the design process.

**General and Transferable Skills**

*After completing this module, students will be able to:*

1. Enhance the imagination skills and the ability to develop the presentation skills for design projects.

**Teaching/Learning Strategies**

- Studios.
- Design sketch.
- Individual projects.
- Class presentation.
- Field trips.

**Learning Materials**

**Useful Websites:**

- [http://www.archnet.org](http://www.archnet.org)
- [http://www.greatbuilding.com](http://www.greatbuilding.com)
- [http://www.architecture.com](http://www.architecture.com)

**Reference Text:**


**Supplementary Readings:**

- Contemporary Architecture, Architectural Digest.
- Selected Manuals, catalogues, journals, Latest Ed.

**Assessment Scheme**

- Weekly graphical assignment.
- One-day architectural design sketch.
- Jury oral presentation.
- Unseen graphical Final-Exam.

**Assessment Pattern**

- Design development including sketches 60%
- Reviews, final project submission and jury
- Unseen Final Exam 40%

| Total | 100% |

**Learning Unit Contact Hours**

- Studios 4.5 hrs / week
- Lectures 1.5 hrs / week
- Total class contact hours 84 hrs / semester
- Total self study hours 60 hrs / semester
- Total study hours 144 hrs / semester

**Module Leader**

Staff
Module Code: ASE 352
Title: Architectural History and Theories III
Level: 3
Credit Hours: 3
Prerequisites: ASE 262

AIMS
This module is designed to provide students with an understanding of the historical and theoretical background of architectural thoughts and theories from the mid 19th century to the 20th century and beyond. Roots of the Modern Movement in architecture from the Chicago School in America to Art Nouveau, Futurism, De Stijl, Expressionism, etc. in Europe. The main trends and directions from Modern Architecture to Late modern Architecture reaching Post Modern Architecture and Contemporary movements will be reviewed. The module will also provide an in-depth coverage of architectural theories throughout the 20th century and discuss the social, economical, political and cultural influences which helped shape its architecture. The module concludes with a comprehensive study of the architectural trends in Egypt as a reflection of Western architectural theories.

SYLLABUS

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Shift from Traditional Life to Modern Life.</td>
</tr>
<tr>
<td>Nineteenth Century Architecture: Revival of Classical Order.</td>
</tr>
<tr>
<td>Nineteenth Century Architecture: Gothic Revival</td>
</tr>
<tr>
<td>19th Century Architecture: Steel Structures and Chicago School.</td>
</tr>
<tr>
<td>The Modern Movement in Architecture.</td>
</tr>
<tr>
<td>Modern Architecture: Frank Lloyd Wright.</td>
</tr>
<tr>
<td>Modern Architecture: German School, Deutsche Werkbund, Bauhaus.</td>
</tr>
<tr>
<td>Modern Architecture: Mies Van Der Rohe.</td>
</tr>
<tr>
<td>Modern Architecture: De Stijl, Cubism and Plasticism (Le Corbusier).</td>
</tr>
<tr>
<td>Modern Architecture: Structural Magnification.</td>
</tr>
<tr>
<td>Late Modern Architecture: Louis Kahn, Peter and Allison Smithson.</td>
</tr>
<tr>
<td>Post Modern Architecture: Historic Formalism and Romanticism.</td>
</tr>
<tr>
<td>Post Modern Architecture: Ecclecticism and Historicism.</td>
</tr>
<tr>
<td>Post Modern Architecture: Neo-vernacular and Critical Regionalism.</td>
</tr>
<tr>
<td>Cosmic Architecture: Self-similar, Fractal and Nonlinear Architecture.</td>
</tr>
<tr>
<td>Cosmic Architecture: Folded, Green and Ecological Architecture.</td>
</tr>
</tbody>
</table>

LEARNING OUTCOMES

Knowledge
After completing this course students will be able to demonstrate knowledge and understanding of:

1. The historical and theoretical approaches to architectural design in the 20th century.
2. The social, economical, political and cultural influences which helped shape the architecture of the 20th century.
3. The theoretical issues that confront students in the design studio, the lecture room and practice.

**Intellectual Skills**

*After completing this module students will be able to:*

1. Develop skills in critical scholarship and writing.
2. Engage in informed debates about modern and contemporary architecture.
3. Benefit from these different schools of thought in the designs to be produced.

**Practical and Professional Skills**

*After completing this course students will be able to:*

1. Increase the awareness about many architectural theories in critical scholarship and writing.
2. Analyse the salient features which characterize each trend in contemporary architecture.

**General and Transferable Skills**

*After completing this course students will be able to:*

1. Explore the architectural theorising in the 19th & 20th century and beyond.
2. Distinguish between the various trends in contemporary architecture.

**Teaching/Learning Strategies**

- Lectures.
- Tutorials.
- Class presentation.
- Individual term paper.

**Learning Materials**

**Software Requirements:**

- Computer Data Shows

**Videos / Slides:**

- Video, Slides (The instructor’s collection).

**Useful Websites:**

- [http://www.greatbuildings.com](http://www.greatbuildings.com)
- [http://www.archizine.com](http://www.archizine.com)
- [http://www.cms.open2.net/modernity](http://www.cms.open2.net/modernity)

**Reference Text:**


**Supplementary Readings:**


**Assessment Scheme**

- Weekly assignments (6-8 assignments).
- Short written quizzes. (3 quizzes).
- Class written tests. (2 tests).
- Individual term paper. (2 papers).
- Group term project (1 project).

**Assessment Pattern**

- Class participation: 5%
- Assignments: 10%
- Tests and quizzes 5%
- Projects and reports 20%
- Unseen Mid-Term Exam 20%
- Unseen Final Exam 40%

<table>
<thead>
<tr>
<th>Total</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Learning Unit Contact Hours</strong></td>
<td></td>
</tr>
<tr>
<td>Lectures</td>
<td>3 hrs/week</td>
</tr>
<tr>
<td>Tutorials</td>
<td>1.5 hrs/week</td>
</tr>
<tr>
<td>Total class contact hours</td>
<td>63 hrs/semester</td>
</tr>
<tr>
<td>Total self study hours</td>
<td>45 hrs/semester</td>
</tr>
<tr>
<td>Total study hours</td>
<td>108 hrs/semester</td>
</tr>
</tbody>
</table>

**Module Leader**

Staff
Module Code : ASE 353  
Title : Interior Design  
Level : 3  
Credit Hours : 2  
Prerequisites : ASE 261

**AIMS**  
This module is designed to introduce the architectural student to the elements which constitute the various interior environments. It emphasizes space planning, colour theory, characteristics of materials, lighting techniques, etc. Coordination of furnishing and accessories, proper understanding and application of colour, texture and pattern possibilities of the various materials are stressed. In addition, it discusses criteria for the proper selection of materials and finishes for all interior design elements.

**SYLLABUS**

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interior Design Elements.</td>
</tr>
<tr>
<td>Interior Design Materials.</td>
</tr>
<tr>
<td>Characteristics of Materials.</td>
</tr>
<tr>
<td>Colour Theory.</td>
</tr>
<tr>
<td>Textures and Patterns.</td>
</tr>
<tr>
<td>Interior Design Elements: Walls and Wall Finishes.</td>
</tr>
<tr>
<td>Interior Design Elements: Ceilings and Ceiling Systems.</td>
</tr>
<tr>
<td>Interior Design Elements: Furniture.</td>
</tr>
<tr>
<td>Interior Design Elements: Lighting.</td>
</tr>
<tr>
<td>Interior Design Elements: Art and Accessories.</td>
</tr>
</tbody>
</table>

**Learning Outcomes**

**Knowledge**

**After completing this course students will be able to demonstrate knowledge and understanding of:**

1. The elements of interior design which constitute any internal space.
2. The appropriate materials for the various interior design elements (floors, walls, ceilings, etc.).
3. The application of colour, texture and pattern possibilities for the various materials selected.
4. The importance of space planning, colour theory, furniture, lighting techniques, art and accessories in the interior design of a space.

**Intellectual Skills**

**After completing this module, students will be able to:**

1. Make more appropriate choices of colour schemes, combining textures, styles, patterns, or finishes.
2. Develop a checklist of materials that are proven to be suitable and appropriate in combination with each other.

**Practical and Professional Skills**

**After completing this course students will be able to:**
1. Design an interior of a private or public building including, but not limited to, design of the interior space, design or selection of the furniture and fabrics, the lighting scheme and fixtures, the choice of colours, textures and possible patterns of the flooring, walls and ceilings; design or selection of plants, art and accessories.

2. Emphasize space planning, colour theory, characteristics of materials and lighting techniques.

3. Illustrate alternative design solutions to the various interior design problems.

General and Transferable Skills
After completing this course students will be able to:
1. Know the criteria for the proper selection of materials and finishes for all interior design elements.

Teaching/Learning Strategies
- Design studios.
- Tutorials.
- Class presentation.

Learning Materials
Videos / Slides:
- Slide presentations

Useful Websites:
- http://www.interiordesign.com
- http://www.interiors.com

Reference Text:

Supplementary Readings:

Assessment Scheme
- Individual term project
- Unseen graphical Final-Exam.

Assessment Pattern
- Class participation 5%
- Assignments 10%
- Projects and reports 20%
- Main project 25%
- Unseen Final Exam 40%

Total 100%

Learning Unit Contact Hours
- Lectures 3 hrs / week
- Total class contact hours 42 hrs / semester
- Total self study hours 30 hrs / semester
- Total study hours 72 hrs / semester

Module Leader
Staff
MSA UNIVERSITY  
FACULTY OF ENGINEERING  
MODULE OUTLINE

Module Code : ASE 354  
Title : Building Construction II  
Level : 3  
Credit Hours : 3  
Prerequisites : ASE 264

AIMS
This module is designed to give students an overview of the materials and methods used in the construction of buildings. It proceeds from where module ASE 264 stopped, resuming the sequence of building operations to the applications of the various finishing materials, fixtures and fittings (plumbing and electrical). The latest in building materials and construction techniques is reviewed and discussed to keep the students updated with the developments in the building industry worldwide.

SYLLABUS

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical Details of Stairs, Windows and Doors.</td>
</tr>
<tr>
<td>Materials used in the above mentioned Elements.</td>
</tr>
<tr>
<td>Plumbing Network, Details and Specifications.</td>
</tr>
<tr>
<td>Electrical Conduits, connections, details and specification.</td>
</tr>
<tr>
<td>Mechanical systems, Alarm Systems and Fire Protection Systems.</td>
</tr>
</tbody>
</table>

Learning Outcomes

Knowledge and Understanding
After completing this module, students will be able to demonstrate knowledge and understanding of:
1. Architectural detailing of building elements.
2. Technical installations & network specification within the building.

Intellectual Skills

After completing this module, students will be able to:
1. Recognize technical possibilities and limitations regarding building installations & networking.

Practical and Professional Skills
After completing this module, students will be able to:
1. Reflect the recognized technical possibilities and limitation regarding building insulation & networking in the form of more realistic and efficient designs.

General and Transferable Skills
After completing this module, students will be able to:
1. Apply the logical approach learned from frequent observation.

Teaching/Learning Strategies

- Lectures.
- Tutorials.
- Class presentation.
- Individual projects.
Learning Materials

Software Requirements:
- Data shows for the latest technological methods in the field of building industry and types of construction materials.

Videos / Slides:
- Videos and Slides of different materials and construction techniques.

Useful Websites:
- http://www.archzine.com
- http://rcf.usc.edu

Reference Text:

Supplementary Readings:

Assessment Scheme
- Graphical assignments (6 Assignments).
- Short written quizzes (3 Quizzes).
- Individual term project (One term Paper).

Assessment Pattern
- Class participation 5 %
- Assignments 10 %
- Quizzes 5 %
- Term project 20 %
- Unseen Mid-Term Exam 20 %
- Unseen Final Exam 40 %

Total 100 %

Learning Unit Contact Hours
- Lectures 1.5 hrs / week
- Studios 3 hrs / week
- Total class contact hours 63 hrs / semester
- Total self study hours 45 hrs / semester
- Total study hours 108 hrs / semester

Module Leader
Staff
AIMS
This module is designed to give students a full understanding of the distribution of loads, their path in simple structures and their transition within underneath soil. Students should be able to design all the basic elements of reinforced concrete buildings including footings. Introduction to soil properties, soil investigation and basic criteria for choosing the foundation type are also covered. Students learn to design different types of footings and foundations, such as: shallow foundations, isolated footings, wall footings and raft foundations.

SYLLABUS

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Properties and Mechanical behaviour of Reinforced Concrete.</td>
</tr>
<tr>
<td>Design of Sections Subjected to Bending (Beams).</td>
</tr>
<tr>
<td>Shear in Concrete Beams.</td>
</tr>
<tr>
<td>Design of Concrete Beams and Detailing.</td>
</tr>
<tr>
<td>Design of Solid Slabs.</td>
</tr>
<tr>
<td>Concrete Columns.</td>
</tr>
<tr>
<td>Introduction, Soil Properties and Identification.</td>
</tr>
<tr>
<td>Soil Investigation Design Criteria and Choice of Suitable Foundation.</td>
</tr>
<tr>
<td>Design of Wall Footings.</td>
</tr>
<tr>
<td>Design of Isolated Footings.</td>
</tr>
<tr>
<td>Combined and Raft Foundation Basic Principles.</td>
</tr>
<tr>
<td>Design of Single Storey Buildings.</td>
</tr>
</tbody>
</table>

Learning Outcomes

Knowledge
After completing this course students will be able to demonstrate knowledge and understanding of:

1. The properties and mechanical behaviour of both reinforced concrete and soil.

Intellectual Skills
After completing this module, students will be able to:

1. Understand the criteria for choosing the suitable foundation system.

Practical and Professional Skills
After completing this course students will be able to:

4. Understand the behaviour and design concepts, as well as the principles of concrete elements (slab, beam, column & footing).
5. Calculate a simple concrete structure including column, beam, slab and footing.
General and Transferable skills
After completing this course students will be able to:
1. Provide the knowledge on the principles of structural and constructional systems and techniques.

Teaching/Learning Strategies
- Lectures.
- Tutorials

Learning Materials
Useful Websites:
- http://www.structsource.com

Reference Text:

Supplementary Readings:

Assessment Scheme
- Graphical assignments comprising of R.C design details (6 assignments).
- Written quizzes comprising definitions, true or false, multiple choice questions and problem solving (3 quizzes).
- Written tests comprising of definitions, true or false, multiple choice questions and problem solving (Three 1.5 hr. Tests).
- Group projects.
- Individual projects.
- Unseen written Mid-Term Exam.
- Unseen written Final-Exam.

Assessment Pattern
- Class Participation 10%
- Assignments and Projects 15%
- Tests and Quizzes 15%
- Unseen Mid-Term Exam 20%
- Unseen Final Exam 40%

Total 100%

Learning Unit Contact Hours
- Lectures 3 hrs / week
- Tutorials 1.5 hrs / week
- Total class contact hours 63 hrs / semester
- Total self study hours 45 hrs / semester
- Total study hours 108 hrs / semester

Module Leader
Eng E. Helal
Module Code  : COM 356
Title        : Architectural Computer Graphics II
Level        : 3
Credit Hours : 3
Prerequisites : COM 266

AIMS
This module is designed to give students a detailed knowledge of the techniques and applications of computer modeling, using the latest software such as 3-D Studio or 3D Max. Students should be able to design with a focus on architectural 3-D modeling, rendering and animation. Students will have the ability of initiating project presentations based on examples and step-by-step instructions.

SYLLABUS

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drawing 2-D Shapes.</td>
</tr>
<tr>
<td>Objects of Revolution and Sweeps along Paths, Sections of Objects and Terrain Models.</td>
</tr>
<tr>
<td>Curved Lines &amp; Meshes, Deformation &amp; Rounding.</td>
</tr>
<tr>
<td>Spherical Objects, Boolean, Trim and Stitch Operations, Text, Symbols and Instances.</td>
</tr>
<tr>
<td>Attaching, Extending and Placing; Attributes, Layers and Querying, Insertion and Deletion; Reference Planes &amp; their Palette.</td>
</tr>
<tr>
<td>Views and their Palette; Drafting, Final Project: Modeling 3 Storey Building Images.</td>
</tr>
<tr>
<td>Introduction to 3-D Studio Max.</td>
</tr>
<tr>
<td>Familiarizing Students with the Basic Tools and Palettes.</td>
</tr>
<tr>
<td>Basic Commands.</td>
</tr>
<tr>
<td>Create Primitives, Modifiers, Lights, Utilities, assign Controllers.</td>
</tr>
<tr>
<td>Modify Parameters, Systems, Space Warp Modifiers.</td>
</tr>
<tr>
<td>Material Editor, Track View, Hierarchy.</td>
</tr>
<tr>
<td>Motion, Inverse Kinematics, Binds Rotation, Copy/Paste.</td>
</tr>
</tbody>
</table>

Learning Outcomes
Knowledge

After completing this course students will be able to demonstrate knowledge and understanding of:

1. Computer rendering and presentation graphics software.
2. Design with basic architectural two and three dimensional presentation tools and techniques such as 3D Studio or 3D Max and Prepare drawings for printing and plotting.
Intellectual Skills
After completing this module, students will be able to:
1. Apply the principles and methods of design and the various approaches to the design process in producing computer-aided representations of architectural projects.
2. Improve their abilities of selecting background and foreground elements, lights, shades, filters and effects.
3. Compare and practically choose among a variety of media, such as drawings, models, computers, photographic techniques, in the representation of architectural projects.
4. Experiment with all advanced rendering concepts that can be used in the presentation of design projects.

Practical and Professional Skills
After completing this course students will be able to:
1. Use modern multimedia tools in the architectural presentation of projects.
2. Use computer drafting and presentation techniques to produce 3D modeling and rendering of architectural presentation drawings.

General and Transferable Skills
After completing this course students will be able to:
1. Design with basic architectural two and three dimensional presentation tools and techniques such as 3D Studio or 3D Max.

Teaching/Learning Strategies
- Computer Laboratory.
- Tutorials.

Learning Materials
Software Requirements:
- Form Z, Render Zone and 3-D Studio Max

Useful Websites:
- [http://www.3dmax.com/](http://www.3dmax.com/)
- [http://www.formz.com](http://www.formz.com)

Reference Text:
- Reference Manuals
- Tutorials, Latest Ed.

Supplementary Readings:

Assessment Scheme
- Computer assignments (practicing different commands of the software).
- Individual term project.
- Unseen graphical Mid-Term Exam.
- Unseen graphical Final-Exam.

Assessment Pattern
- Class participation 10%
- Assignments 10%
- Term project 20%
- Unseen Mid-Term Exam 20%
- Unseen Final Exam 40%
<table>
<thead>
<tr>
<th>Total</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Learning Unit Contact Hours</strong></td>
<td></td>
</tr>
<tr>
<td>Lectures</td>
<td>1.5 hrs / week</td>
</tr>
<tr>
<td>Laboratories</td>
<td>3 hrs / week</td>
</tr>
<tr>
<td>Total class contact hours</td>
<td>63 hrs / semester</td>
</tr>
<tr>
<td>Total self study hours</td>
<td>45 hrs / semester</td>
</tr>
<tr>
<td>Total study hours</td>
<td>108 hrs / semester</td>
</tr>
</tbody>
</table>

**Module Leader**
Staff
Module Code : ASE 361
Title : Architectural Design IV
Level : 3
Credit Hours : 4
Prerequisites : ASE351

AIMS
This module is designed to give students a detailed study and application of the spatial complexity in design, programming and space planning as well as human & cultural considerations in design.

SYLLABUS

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Series of weekly Lectures and Presentations will be Scheduled, as well as Field Trips and Site Visits.</td>
</tr>
<tr>
<td>One main project or two smaller projects. In case of the latter, First Project will be Scheduled for a long Period of 8 Weeks; it will include Research Work on Programming and Analysis, as well as designing a Complete Project.</td>
</tr>
<tr>
<td>Second Project will Consider the Vertical Circulation Elements, as well as Vertical Structural Problems that are caused by varied Vertical Functions, this Project will Extend over a 6 Week Period.</td>
</tr>
</tbody>
</table>

Project Examples:
- Multi-Storey Residential or Office Building.
- Mixed–Use Apartment Blocks with Commercial Facility.
- Modern Art Gallery.
- Museum Complex.
- Shopping Mall.
- Medical Center.

Learning Outcomes

Knowledge

After completing this course students will be able to demonstrate knowledge and understanding of:

1. The design of different building types that exhibit higher levels of complexity and challenge.
2. The structural, and construction systems, along with space planning.
3. Architectural programming and its role in architectural design.

Intellectual Skills

After completing this module, students will be able to:

1. Design and represent a variety of building types and design and represent changes or additions to existing buildings (Rehabilitation and retrofitting of buildings).
2. Organize and incorporate the basic knowledge of the principles of structural and constructional systems & techniques.

Practical and Professional Skills

After completing this course students will be able to:
1. Use a plethora of presentation and software media, such as Auto-Cad, Archi-Cad, Photoshop, etc as well as the internet and digital cameras.
2. Use modern multimedia tools in the architectural presentation of projects.

General and Transferable Skills
After completing this course students will be able to:
1. Work creatively and flexibly in a variety of media, such as drawings, models, computers, photographic techniques, to visualize designs and communicate them.
2. Design different building types that exhibit higher levels of complexity and challenge and representing them using traditional drawing and computer-aided drawing techniques.

Teaching/Learning Strategies
- Studios.
- Computer laboratory.
- Class presentation.
- Individual projects.
- Field trips.

Learning Materials
Software Requirements:
- Auto-Cad, Archi-Cad, Adobe Photo-shop,

Videos / Slides:
- Slide shows, Power Point presentations

Useful Websites
- http://www.greatbuildings.com
- http://www.architectureweek.com

Reference Text:

Supplementary Readings:
- Selected Manuals, Catalogues, data Books, Latest ed.

Assessment Scheme
- Weekly graphical/computerised assignments.
- One-day design sketch.
- Individual project(s) (1 or 2 Projects).
- Final submission and Jury
- Unseen graphical Final-Exam.

Assessment Pattern
- Design development including Sketches, reviews, final submission and Jury
  Unseen graphical final exam

Total 100%

Learning Unit Contact Hours
- Studios 4.5 hrs / week
- Lectures 1.5 hrs / week
- Total class contact hours 84 hrs / semester
- Total self study hours 60 hrs / semester
- Total study hours 144 hrs / semester

Module Leader
Staff
**AIMS**

This module is designed to provide students with a detailed analysis and coverage of the various phases of Islamic architecture: Caliphate, Tulunid, Mamluk, Ottoman and Turkish periods. It aims to outline the development of cultural social traditions in the Islamic Art and Architecture of the World.

**SYLLABUS**

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Islamic History and Approaches to the Study of the History of Islamic Architecture.</td>
</tr>
<tr>
<td>Early Islamic Architecture in Cairo.</td>
</tr>
<tr>
<td>Tulunid Architecture in Cairo: Ibn Tulun Mosque</td>
</tr>
<tr>
<td>Hakim Mosque, Al Azhar Mosque and Al Aqmar Mosque.</td>
</tr>
<tr>
<td>Ayyubid Architecture in Cairo: Mausoleum of Al Imam Al Shafie and Madrasa of Al Saleh Najm Al-Din Ayyub.</td>
</tr>
<tr>
<td>Bahari Mamluk Architecture in Cairo: Mosque of Al Zaher Baybars, Complex of Qalawun and Madrasa of Al Nasser Mohammed.</td>
</tr>
<tr>
<td>Complex of Al Sultan Hassan.</td>
</tr>
<tr>
<td>Circassian Mamluk Architecture in Cairo: The Madrasa-Khanqah of Al Sultan Hassan.</td>
</tr>
<tr>
<td>Khanqah of Sultan Al Ghuri.</td>
</tr>
<tr>
<td>Zahir Barquq, the Khanqah of Sultan Faraj Ibn Barquq and the Madrasa and Mosques of Sinan Pacha and Mohammed Ali.</td>
</tr>
<tr>
<td>Regionalism: Islamic Architecture around the world.</td>
</tr>
<tr>
<td>At least two field trips should be planed.</td>
</tr>
</tbody>
</table>

**Learning Outcomes**

**Knowledge**

After completing this course students will be able to demonstrate knowledge and understanding of:

5. The history of the development of Islamic architecture in the Arab world and particularly in Egypt through the study of the changes and innovations in a limited number of important building types.

6. The social, cultural, political & environmental parameter that lie behind the end product (building)

**Intellectual Skills**

After completing this module students will be able to:
5. Determine the requirements for a range of building types and balance between the constraints imposed by society, organisations and technology to develop or assess a project’s design.

6. Recognize the salient features and motifs characteristic of a certain epoch (Tulunid, Fatimid, Ayyubid, Mamluki, etc) through the study of the history and theories of architecture of important Islamic building types.

**Practical and Professional Skills**

*After completing this course students will be able to:*

6. Research and explore further in the historical and theoretical issues relevant to architecture.

7. Appreciate the importance of studying historical precedent in the future development of architecture.

**General and Transferable skills**

*After completing this course students will be able to:*

1. Learn about certain building types that are particularly specific to certain civilizations.

**Teaching/Learning Strategies**

- Lectures.
- Tutorials.
- Class presentation.
- Field trips.
- Team projects.

**Learning Materials**

**Software Requirements**

- Computer data shows of different eras.

**Videos / Slides**

- Slides and Videos: Documentaries of Islamic Monumental Buildings of the World.

**Useful Websites**

- [http://www.archizine.com](http://www.archizine.com)
- [http://www.archnet.org](http://www.archnet.org)
- [http://www.plannet.com](http://www.plannet.com)

**Reference Text:**


**Supplementary Readings:**

- Medina Magazine.

**Assessment Scheme**

- Graphical assignments that include sketching Islamic buildings
- Written quizzes, comprised of definitions, true or false, multiple choice questions and essay questions.
- Class written tests. (2 Tests)
- Individual term paper.
- Group term project, recording and surveying existing buildings.
- Unseen Mid-Term Exam.
- Unseen Final Exam.

**Assessment Pattern**

- Class participation 5%
- Assignments 10%
- Tests and quizzes 5%
- Term paper 20%
- Unseen Mid-Term Exam 20 %
- Unseen Final Exam 40 %

<table>
<thead>
<tr>
<th>Total</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Learning Unit Contact Hours</strong></td>
<td></td>
</tr>
<tr>
<td>Lectures</td>
<td>3 hrs / week</td>
</tr>
<tr>
<td>Tutorials</td>
<td>1.5 hrs / week</td>
</tr>
<tr>
<td>Total class contact hours</td>
<td>63 hrs / semester</td>
</tr>
<tr>
<td>Total self study hours</td>
<td>45 hrs / semester</td>
</tr>
<tr>
<td>Total study hours</td>
<td>108 hrs / semester</td>
</tr>
</tbody>
</table>

**Module Leader**
Staff
Module Code : ASE 363
Title : Urban Planning and Design
Level : 3
Credit Hours : 2
Prerequisites : ASE 261

AIMS
This module is designed to give students a comprehensive overview of urban theories. It includes socio-economic aspects related to urban design, alternative approaches to urban concepts and urban problems in developing countries. It explores the current issues affecting the formulation and implementation of urban plans. It covers an analysis of urban design, classification of urban fabrics, data gathering and surveying of urban projects and design procedures and methodologies of urban settings.

SYLLABUS

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Introduction to the Field of Urban Design.</td>
</tr>
<tr>
<td>Standards and Definitions: Basic Urban Concepts and Approaches.</td>
</tr>
<tr>
<td>Surveying Housing Stock and Classification of Urban Problems.</td>
</tr>
<tr>
<td>Assessment of Future Urban Needs.</td>
</tr>
<tr>
<td>Urban Theories.</td>
</tr>
<tr>
<td>Analysis of Existing Urban Areas: Potentials, Problems and Constraints.</td>
</tr>
<tr>
<td>Socio – Cultural Aspects related to Urban Issues: Distance, Density, etc.</td>
</tr>
<tr>
<td>Alternative Urban Programs.</td>
</tr>
<tr>
<td>Classification of Urban Tissue.</td>
</tr>
</tbody>
</table>

LEARNING OUTCOMES

Knowledge
After completing this course students will be able to demonstrate knowledge and understanding of:
1. Urban theory and the socio-economic aspects related to housing.
2. The comparison between the different aspects that shape and affect urban environments.
3. The classification of urban tissue.

Intellectual Skills
After completing this course students will be able to:
1. Research and evaluate many types of urban projects.
2. Synthesize and draw conclusions to develop programs for original urban projects that are based on objective criteria.

Practical and Professional Skills
After completing this course students will be able to:
1. Compose technical urban studies, analysis, documentation and designs.
2. Assess future urban needs.
3. Analyze existing urban areas with emphasis on their potentials, problems and constraints.

General and Transferable skills
After completing this course students will be able to:
1. Develop and present urban projects using a variety of visual, verbal and written media including both digital and non-digital methods.

2. Prepare analytical reports presenting urban planning and design proposals.

**Teaching/Learning Strategies**

- Lectures.
- Tutorials.
- Class presentation.
- Individual term paper.

**Learning Materials**

**Videos / Slides:**
- Personal collection of different housing projects

**Useful Websites:**
- [http://www.urbanpolicy.berkeley.edu](http://www.urbanpolicy.berkeley.edu)
- [http://www.arch.vt.edu/CAUS/research/vchr/vchr.html](http://www.arch.vt.edu/CAUS/research/vchr/vchr.html)
- [http://www.jchs.harvard.edu/resources/university_and_research.htm](http://www.jchs.harvard.edu/resources/university_and_research.htm)

**Reference Text:**

**Supplementary Readings:**

**Assessment Schemes**

- 3 Short written quizzes comprising definitions, true or false, multiple choice and essay questions.
- Individual term paper including a case study and a comprehensive analysis and detailed research of specific topic. Student findings are to be summarized in the paper with a section for their conclusion and their recommendations.
- Unseen written Mid-Term Exam.
- Unseen written Final-Exam.

**Assessment Pattern**

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class participation</td>
<td>5%</td>
</tr>
<tr>
<td>Assignments</td>
<td>10%</td>
</tr>
<tr>
<td>Tests and quizzes</td>
<td>10%</td>
</tr>
<tr>
<td>Projects and reports</td>
<td>15%</td>
</tr>
<tr>
<td>Unseen Mid-Term Exam</td>
<td>20%</td>
</tr>
<tr>
<td>Unseen Final Exam</td>
<td>40%</td>
</tr>
</tbody>
</table>

**Total** 100%

**Learning Unit Contact Hours**

<table>
<thead>
<tr>
<th>Component</th>
<th>Hours per week/semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lectures</td>
<td>3 hrs / week</td>
</tr>
<tr>
<td>Total class contact hours</td>
<td>42 hrs / semester</td>
</tr>
<tr>
<td>Total self study hours</td>
<td>30 hrs / semester</td>
</tr>
<tr>
<td>Total study hours</td>
<td>72 hrs / semester</td>
</tr>
</tbody>
</table>

**Module Leader**

Staff
Module Code : ASE 364
Title : Working Drawings I
Level : 3
Credit Hours : 3
Prerequisites : ASE 354

AIMS
This module is designed to introduce architecture students to an important aspect of construction documents: working drawings. It entails the preparation of small scale orthographic projections (plans, elevations, sections) generally referred to as the general drawings of the construction documents’ set. In addition, the site plan with its’ landscaping, are also dealt with. It also introduces students to the proper methods of the preparation and production of architectural working drawings.

SYLLABUS

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Floor Plans.</td>
</tr>
<tr>
<td>Sections.</td>
</tr>
<tr>
<td>Elevations.</td>
</tr>
<tr>
<td>Site Plans.</td>
</tr>
<tr>
<td>Landscaping.</td>
</tr>
<tr>
<td>Introduction to Doors and Windows: Types and Schedules.</td>
</tr>
</tbody>
</table>

Learning Outcomes

Knowledge and Understanding:
Upon completion of this module, students should be able to demonstrate knowledge and understanding of:
1. The methods of preparation of the architectural general drawings of the construction documents’ set for a small building using traditional drawing techniques.
2. The difference between architectural presentation drawings and detailed working drawings.

Intellectual Skills
After completing this module, students will be able to:
1. Understand the basic principles and techniques of the production of architectural general working drawings (plans, sections and elevations).

Practical and Professional Skills
After completing this module, students will be able to:
1. Produce proper fully-dimensioned and annotated architectural general working drawings.
2. Prepare and specify door and window types and schedules.

General and Transferable Skills
After completing this module, students will be able to:
1. Transfer architectural presentation drawings into proper architectural working drawings for any project.
### Teaching/Learning Strategies
- Lectures.
- Design studios.
- Tutorials.
- Individual projects.

### Learning Materials

#### Software Requirements:
- Auto-Cad

#### Useful Websites:
- [http://www.arccat.com](http://www.arccat.com)
- [http://www.graphisoft.com](http://www.graphisoft.com)

#### Reference Text:

#### Supplementary Readings:

### Assessment Scheme
- Weekly graphical assignment.
- One-day architecture design sketch.
- Individual term project.
- Jury of term project
- Unseen graphical Final-Exam.

### Assessment Pattern
- Class participation 5 %
- Assignments 15 %
- Main Project 40 %
- Unseen graphical Final Exam 40 %

<table>
<thead>
<tr>
<th>Total</th>
<th>100%</th>
</tr>
</thead>
</table>

### Learning Unit Contact Hours
- Studios 3 hrs / week
- Lectures 1.5 hrs / week
- Total class contact hours 63 hrs / semester
- Total self study hours 45 hrs / semester
- Total study hours 108 hrs / semester

### Module Leader
- Staff
AIMS
This module is designed to provide students with a thorough understanding of the basic principles behind the design of different types of reinforced concrete floors and slabs (flat and waffle slabs, ribbed & hollow block slabs), stairs, framed and wall structures. In addition, the module covers the design of deep foundations and retaining structures, as well as discussions of geotechnical problems in architectural engineering.

SYLLABUS

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design of Bearing wall Structures.</td>
</tr>
<tr>
<td>Flat and Waffle Slabs.</td>
</tr>
<tr>
<td>Ribbed Waffle Slabs.</td>
</tr>
<tr>
<td>Design of R.C. Frames</td>
</tr>
<tr>
<td>Framed and Walled Buildings.</td>
</tr>
<tr>
<td>Design of Piles.</td>
</tr>
<tr>
<td>Retaining Walls and Earth Pressures</td>
</tr>
<tr>
<td>Excavation and Stability of Slopes.</td>
</tr>
<tr>
<td>Geotechnical Problems (Landslides, Dewatering, Soil Strengthening, etc.).</td>
</tr>
</tbody>
</table>

LEARNING OUTCOMES

Knowledge

After completing this course students will be able to demonstrate knowledge and understanding of:

1. The principles of structural and constructional systems and techniques.

Intellectual Skills

After completing this module, students will be able to:

1. Design both large span and multi-storey structures.
2. Express clear understanding of soil/water problems.

Practical and Professional Skills

After completing this course students will be able to:

1. Design R.C frames.

General and Transferable skills

After completing this course students will be able to:

1. Understand the design of deep foundations and retained earth structures.
Teaching/Learning Strategies

- Lectures.
- Tutorials.

Learning Materials

Useful Websites


Reference Text:


Supplementary Readings:


Assessment Scheme

- Graphical assignment comprised of R.C. design details (6 assignments).
- Written tests comprising definitions, multiple choices and problem solving (3 Tests).
- Unseen written Mid-Term Exam.
- Unseen written Final Exam.
- Group project.
- Individual project.

Assessment Pattern

- Class participation 10%
- Assignments and projects 20%
- Tests and quizzes 10%
- Unseen Mid-Term Exam 20%
- Unseen Final Exam 40%

<table>
<thead>
<tr>
<th>Total</th>
<th>100%</th>
</tr>
</thead>
</table>

Learning Unit Contact Hour

- Lectures 3 hrs / week
- Tutorials 1.5 hrs / week
- Total class contact hours 63 hrs / semester
- Total self study hours 45 hrs / semester
- Total study hours 108 hrs / semester

Module Leader

Staff
Module Code: GSE 366  
Title: Technical Service Systems I  
Level: 3  
Credit Hours: 2  
Prerequisites: BSC 162

AIMS
This module is designed to introduce students to the principles of daylighting, artificial lighting and acoustics. It provides the tools necessary for an efficient integration of issues of daylighting in the overall design of buildings. Fundamentals of daylighting and artificial lighting are introduced: physics of light propagation, solar radiation, photometry, electric lighting, lamps and luminaries characteristics, electric power. Principles of sound generation, propagation, and reception are discussed. It offers a general introduction to the design of electrical power systems, as well as acoustical design criteria for buildings.

SYLLABUS

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct Sun, Solar Radiation and Daylight.</td>
</tr>
<tr>
<td>Daylighting design.</td>
</tr>
<tr>
<td>Fundamentals of Daylighting and artificial lighting.</td>
</tr>
<tr>
<td>Solar Radiation and Photovoltaics</td>
</tr>
<tr>
<td>Electric Demand Control, System Components, and Wiring in Buildings.</td>
</tr>
<tr>
<td>Electric Lighting, Lumens, Lamps, and Luminaries.</td>
</tr>
<tr>
<td>Electric Lighting Design and Management.</td>
</tr>
<tr>
<td>Acoustical Design criteria.</td>
</tr>
<tr>
<td>Principles of Sound Generation, Propagation and Reception.</td>
</tr>
<tr>
<td>Materials for Sound Absorption, Reflection, and Transmission.</td>
</tr>
</tbody>
</table>

LEARNING OUTCOMES

Knowledge
After completing this course students will be able to demonstrate knowledge and understanding of:

1. The basic requirements of Electrical Systems in buildings.
2. The appropriate acoustical systems for buildings.
3. The principles and methods of daylight design.

Intellectual Skills
After completing this module, students will be able to:

1. Calculate lighting requirements for the various spaces.
2. Choose the proper materials for sound absorption and reflection.
3. Propose the appropriate acoustical system for a given building.

Practical and Professional Skills
After completing this course students will be able to:
8. Design taking into account the three basic architectural sciences: day lighting, artificial lighting and acoustics.
9. Calculate lighting and acoustic requirements for any building project.
10. Analyse the principles and methods of acoustical design for buildings.

**General and Transferable skills**
**After completing this course students will be able to:**

2. Use the acquired knowledge into architectural design.

**Teaching/Learning Strategies**
- Lectures.
- Tutorials.
- Class presentation.
- Term projects paper.

**Learning Materials**

**Useful Websites:**
- http://www.smartarch.com
- http://www.designgrid.com
- http://www.atdi.com

**Reference Text:**

**Supplementary Readings:**
- Architectural Record Magazine, Arca Magazine.

**Assessment Scheme**
- Short written quizzes, comprised of definitions, true or false, and essay questions (4 Quizzes).
- Group term project, working as teams on a case study to collect information and present the findings (1 term Project).
- Unseen written Mid-Term Exam.
- Unseen written Final Exam.

**Assessment Pattern**
- Class participation 10%
- Tests and quizzes 10%
- Projects 20%
- Unseen Mid-Term Exam 20%
- Unseen Final Exam 40%
- Total 100%

**Learning Unit Contact Hours**
- Lecture 3 hrs / week
- Total class contact hours 42 hrs / semester
- Total self study hours 30 hrs / semester
- Total study hours 72 hrs / semester

**Module Leader**
Staff
400's LEVEL
MODULES
Module Code: ASE 451
Title: Architectural Design V
Level: 4
Credit Hours: 5
Prerequisites: ASE 361

AIMS
This module is designed to provide students with an understanding of buildings’ technical systems which should be integrated within the design process. Selected projects should give more considerations to building envelopes, including form, massing articulation and fenestration. It also covers the use of computers in analysis, design, and presentation of projects.

SYLLABUS

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>One-day Sketch Problems will be Scheduled along with a Series of Lectures, Presentations and Site Visits.</td>
</tr>
<tr>
<td>One Main or Two smaller projects. In case of the latter: First Project will be Larger (9 weeks). It will Incorporate the Design Objectives of Form, Envelope Treatment, and the use of Auto-Cad Systems to Design in 3-D.</td>
</tr>
<tr>
<td>Second Project will be smaller in Scope and Size (5 weeks) and Deals with all Design Principles that were previously covered, to get more Practice with Design Problems.</td>
</tr>
</tbody>
</table>

Project Examples:
- Cultural centers.
- Museums of different types.
- Hospitals or special care facilities.
- High density housing.
- Residential compound in an urban context.
- Hotels.
- Education complex.
- Embassy buildings.
- Community development center in a certain context

Learning Outcomes
Knowledge
After completing this course students will be able to demonstrate knowledge and understanding of:
4. Structural, and construction systems, along with space planning.
5. Architectural programming and its role in architectural design.
6. The usage of computer-aided design programs such as Auto-Cad and thinking in 3-D

Intellectual Skills
After completing this module, students will be able to:
1. Organize the basic knowledge of the principles of structural, constructional and environmental systems & techniques.
2. Design and represent a variety of building types as well as changes or additions to existing buildings (Rehabilitation and retrofitting of buildings)

Practical and Professional Skills
After completing this course students will be able to:
1. Evaluate the complete building life cycle, from conception to realization to post – occupancy evaluation.
2. Use the latest software tools for the designing and modeling of buildings.
3. Use modern multimedia tools in the architectural representation of projects.

**General and Transferable Skills**

After completing this course students will be able to:

1. Design different building types that exhibit higher levels of complexity and challenge.
2. Work creatively and flexibly in a variety of media, such as drawings, models, computers, photographic techniques, to visualize designs.

**Teaching/Learning Strategies**

- Design Studios.
- Computer Laboratory.
- Field Trips.
- Class Presentation

**Learning Materials**

**Software Requirements:**
- Auto-Cad, Archi-Cad, Adobe Photo-Shop.

**Videos / Slides:**
- Slide shows, Power Point presentations of similar existing projects.

**Useful Websites:**
- [http://www.greatbuildings.com](http://www.greatbuildings.com)
- [http://www.architecture.com](http://www.architecture.com)
- [http://www.architectureweek.com](http://www.architectureweek.com)

**Reference Text:**

**Supplementary Readings:**

**Assessment Scheme**

- Weekly graphical and computerised assignments (12 Assignments).
- One-day design sketch (2 design sketches).
- Main project(s) (1 big or 2 small Project(s)).
- Final jury
- Unseen graphical Final Exam.

**Assessment Pattern**

- Design development including Sketched, reviews, final project submission and jury 60%
- Unseen graphical Final Exam 40%

<table>
<thead>
<tr>
<th>Total</th>
<th>100%</th>
</tr>
</thead>
</table>

**Learning Unit Contact Hours**

- Studios 6 hrs / week
- Lectures 1.5 hrs / week
- Total class contact hours 105 hrs / semester
- Total self study hours 75 hrs / semester
- Total study hours 180 hrs / semester

**Module Leader**

Staff
MSA UNIVERSITY
FACULTY OF ENGINEERING
MODULE OUTLINE

Module Code: ASE 452
Title: Landscape Design
Level: 4
Credit Hours: 2
Prerequisites: ASE 361

AIMS
This module is designed to introduce students to the physical design media of landscape architecture that result in a “sensible form.” The module presents the vocabulary, significance, characteristics, potential uses, and design guidelines for the physical design elements. The student should reach an understanding of the beauty of nature and learn how to respect and deal with it.

SYLLABUS

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction &amp; scope of work</td>
</tr>
<tr>
<td>Definitions &amp; framework</td>
</tr>
<tr>
<td>Types &amp; expressions of landform</td>
</tr>
<tr>
<td>Hardscape design concepts</td>
</tr>
<tr>
<td>Softscape design concepts</td>
</tr>
<tr>
<td>Plant types &amp; visual characteristics</td>
</tr>
<tr>
<td>Planting plan</td>
</tr>
<tr>
<td>Water as a design element</td>
</tr>
<tr>
<td>Light in landscape design</td>
</tr>
<tr>
<td>Landscape design process</td>
</tr>
</tbody>
</table>

Learning Outcomes

Knowledge
After completing this course students will be able to demonstrate knowledge and understanding of:
1. The constraints involved in site analysis process.
2. The various types of hardscape and softscape elements involved in the landscaping process.
3. The fundamental principles of designing hardscape and softscape elements.
4. The selection of outdoor materials and plant types.
5. The vocabulary of outdoor space; and integration of public spaces with local community and environment.

Intellectual Skills
After completing this module, students will be able to:
1. Critically evaluate the environmental forces involved in site analysis.
2. Develop a landscape configuration that integrates the various landscape elements into a unified and coherent composition.
3. Develop skills in choosing the appropriate plant types according to checklists.

Practical and Professional Skills
After completing this course students will be able to:
1. Deal with different site needs & uses according to the owner needs.
2. Design functional, environmental, and aesthetic landscape elements and designs.
3. Use hardscape and softscape elements to advantage.
General and Transferable skills
After completing this course students will be able to:
1. Understand & develop the outdoor elements that can be used in design projects to balance the indoor & outdoor through creative landscaping.

Teaching/Learning Strategies
- Lectures.
- Tutorials.
- Class presentation.
- Field trips.
- Individual Projects.

Learning Materials
Videos / Slides
- Transparencies or colored slides to explain the detailed topic of the module

Useful Websites
- http://www.gardendesigner.com/
- http://landscaping.about.com/

Reference Text

Supplementary Readings

Assessment Scheme
- Periodic assignments.
- Sketchbook
- Short quizzes.
- Individual term project(s).
- Final-Exam.

Assessment Pattern
- Class participation 5%
- Assignments & Sketchbook 10%
- Quizzes 5%
- Individual term projects 20%
- Main Project 20%
- Unseen Final Exam 40%

Total 100%

Learning Unit Contact Hours
- Lectures 3 hrs / week
- Total class contact hours 42 hrs / semester
- Total self study hours 30 hrs / semester
- Total study hours 72 hrs / semester

Module Leader
Staff
Module Code : ASE 4531
Title : Interior Presentation Techniques
Level : 4
Credit Hours : 3
Prerequisites : ASE 353 & Min. 100 Cr.

AIMS
This module is designed to familiarize students with the know-how of implementing the theoretical studies & background of interior design through the most recent & specialized computer software (V-ray, 3D Max). Among others, it will help the student make a 3D model on 3D Max programme & render the scene using V-ray render engine to get the quality of a photo as a realistic image.

SYLLABUS

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>3D Modeling by 3D MAX</td>
</tr>
<tr>
<td>Lightining Technique Using V-Ray</td>
</tr>
<tr>
<td>Applying Texture &amp; Mapping Using V-Ray</td>
</tr>
<tr>
<td>Applying Environmental Effects</td>
</tr>
<tr>
<td>Rendering using V-ray Render Engine</td>
</tr>
<tr>
<td>Adding Final Effects &amp; Filters Using Adobe Photoshop</td>
</tr>
</tbody>
</table>

Learning Outcomes

Knowledge

After completing this course students will be able to demonstrate knowledge and understanding of:

1. The Identification & the comparison between various tools & the available techniques for creating 3D models & renderings.
2. Which software programme to use for producing a professional set of drawings for interior design presentations.
3. The relevant styles that are favoured in the Egyptian market while being aware of the market prices of the used materials.

Intellectual Skills

After completing this module, students will be able to:

6. Compare and select which tool and representation technique for creating 3D models and renderings to use for a specific interior.
7. Learn the relation between spaces & furniture properties.

Practical and Professional Skills

After completing this course students will be able to:

1. Produce a complete 3D modeled & rendered interior with the quality of a photo as a realistic image.
2. Produce professional set of drawings for client presentation by using specialized computer software such as 3D MAX then rendering the scene using V-ray.
3. Produce a 3D rendered & modelled exterior.
4. Add final effects and filters using Adobe Photoshop.

**General and Transferable skills**

After completing this course students will be able to:

1. Visualize the final effect of material, colour, texture, etc., of the interior design proposal prior to realization, and make changes accordingly.

**Teaching/Learning Strategies**

- Lectures
- Computer labs.
- Field trips.
- Individual Projects.

**Learning Materials**

**Software Requirements**

- V-ray (version: V-Ray V. 1.50.06))
- 3D Max program

**Useful Websites**

- www.interiordesign.net
- www.interior-resources.com/index.html

**Reference Text**


**Supplementary Readings**

- Magazines: Domus, le Marche’, Interiors, etc.

**Assessment Scheme**

- Computer rendering & Modeling Assignments
- Computer Lab Quizzes
- Individual term project

**Assessment Pattern**

- Class participation 5 %
- Assignments 10 %
- Quizzes 5 %
- Project 20 %
- Unseen Mid-Term Exam 20 %
- Unseen Final Exam 40 %

Total 100%

**Learning Unit Contact Hours**

- Lectures 3 hrs/week
- Tutorials 1.5 hrs/week
- Total class contact hours 63 hrs/semester
- Total self study hours 45 hrs/semester
- Total study hours 108 hrs/semester

**Module Leader**

Staff
Module Code : ASE 4532
Title : Advanced ArchiCAD & Artlantis
Level : 4
Credit Hours : 3
Prerequisites : COM 356 & Min. 100 cr.

AIMS
This module is designed to enable students to fully understand the benefits of BIM CAD concept and to use it in creating their designs. It deals with building 3D Architectural Models and professional 3D rendering and Animation. Students will be able to create their own libraries for their design studios and other modules which require 3D Modeling. They will also be able to perform initial energy analysis for the buildings they design. Latest version of Graphisoft ArchiCAD, Graphisoft EchoDesigner and Abvent Artlantis Studio software will be used.

SYLLABUS

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curtain Walls</td>
</tr>
<tr>
<td>Stairs Tool (Creation of free Shape Stairs)</td>
</tr>
<tr>
<td>Meshes</td>
</tr>
<tr>
<td>Goodies &amp; Add-on</td>
</tr>
<tr>
<td>Zone Tool</td>
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<tr>
<td>Calculations (Using BIM model in Quantity Surveying)</td>
</tr>
<tr>
<td>Section &amp; Elevation Tools advance modeling effects</td>
</tr>
<tr>
<td>Complex Profiler (Wall, Column &amp; beams) &amp; Log details</td>
</tr>
<tr>
<td>Creating Library Parts</td>
</tr>
<tr>
<td>Solid Element Operation</td>
</tr>
<tr>
<td>Align View (inserting the building into the site)</td>
</tr>
<tr>
<td>Virtual Reality cameras</td>
</tr>
<tr>
<td>Advanced Menu Commands</td>
</tr>
<tr>
<td>EchoDesigner (Basic Energy Analysis)</td>
</tr>
<tr>
<td>Introduction to Artlantis</td>
</tr>
<tr>
<td>Document Management</td>
</tr>
<tr>
<td>Working Environment</td>
</tr>
<tr>
<td>Working with Artlantis</td>
</tr>
<tr>
<td>Rendering</td>
</tr>
<tr>
<td>Animation</td>
</tr>
</tbody>
</table>

LEARNING OUTCOMES

Knowledge
After completing this course students will be able to demonstrate knowledge and understanding of:
1. The benefits of using BIM CAD.
2. The prediction of the performance of buildings through basic energy analysis in software, and accordingly, how to think “green”.
3. The full rendering capabilities of the software.

Intellectual Skills
After completing this module, student will be able to:
1. Apply the principles and methods of BIM CAD.
2. Have various approaches to the design process to create true BIM Models.
3. Improve the abilities of creating complex buildings.
4. Verify how “green” the designed buildings they designed are.

**Practical and Professional Skills**

_after completing this course students will be able to:_

5. Make full use of the capabilities of AutoCAD & ArchiCAD.
6. Use modern rendering tools to create realistic still and animated images in the architectural presentation of projects.

**General and Transferable skills**

_after completing this course students will be able to:_

1. Develop & present the design concept by using various representation tools.
2. Produce virtual reality walk-through animations and videos.

**Teaching/Learning Strategies**

- Computer Laboratory.

**Learning Materials**

**Software Requirements:**
- Graphisoft ArchiCAD, Graphisoft EchoDesigner, Abvent Artlantis Studio.

**Useful Websites:**
- [http://www.graphisoft.com](http://www.graphisoft.com)
- [http://www.artlantis.com](http://www.artlantis.com)
- [http://www.archicadwiki.com](http://www.archicadwiki.com)

**Reference Text:**
- ArchiCAD build-in the program help and PDF manuals.
- Artlantis build-in the program help.

**Supplementary Readings:**
- Artlantis Missing Book.
- The Artlantis Attitude.

**Assessment Scheme**

- Computer assignments (4 assignments).
- Individual term project
- Unseen Mid-Term Exam.
- Unseen Final-Exam.

**Assessment Pattern**

- Class participation 5 %
- Computer assignments 25 %
- Individual projects 10 %
- Unseen Mid-Term Exam 20 %
- Unseen Final Exam 40 %

<table>
<thead>
<tr>
<th>Total</th>
<th>100 %</th>
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</thead>
</table>

**Learning Unit Contact Hours**

- Lectures 3 hrs / week
- Laboratories 1.5 hrs / week
- Total class contact hours 63 hrs / semester
- Total self study hours 45 hrs / semester
- Total study hours 108 hrs / semester

**Module Leader**

Staff
Module Code : ASE 4533
Title : GIS in Urban Studies
Level : 4
Credit Hours : 3
Prerequisites : COM 266, ASE 363 & Min. 100 Cr.

AIMS
This module is designed to provide students with an introduction to Geographic Information Systems (GIS) and Science. The leading software technology in the field of GIS (ESRI's ArcGIS 9.2.) Through the use of this software, the student will be familiarized with the concepts, science and theory behind geographic information, as well as give practical hands-on experience in ArcGIS and its applications in Urban Planning.

SYLLABUS

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction and Overview</td>
</tr>
<tr>
<td>Geographic Information Systems</td>
</tr>
<tr>
<td>Geographic Information Systems Functions</td>
</tr>
<tr>
<td>Geographic Information Systems Vector and raster data analysis</td>
</tr>
<tr>
<td>Geographic Information Systems Data capturing techniques</td>
</tr>
<tr>
<td>3D Analysis and visualization</td>
</tr>
<tr>
<td>Modeling and solving problems using Geographic Information Systems</td>
</tr>
<tr>
<td>Urban Planning applications</td>
</tr>
</tbody>
</table>

Learning Outcomes

Knowledge

After completing this course students will be able to demonstrate knowledge and understanding of:

1. The benefits of using ArcGIS desktop software.
2. The Integration of theory/science with technical skills to design, implement and present a GIS project.

Intellectual Skills

After completing this module, students will be able to:

1. Use hands-on experience in ArcGIS software to design and present a GIS project.

Practical and Professional Skills

After completing this course students will be able to:

1. Use the software in identifying geographic information.
2. Solve problems through modeling using Geographic Information Systems.

General and Transferable skills

After completing this course students will be able to:

1. Apply the learnt concepts on Urban Planning applications.
Teaching/Learning Strategies
- Lectures.
- Tutorials.
- Class presentation.
- Field trips.
- Individual Projects.

Learning Materials
Software Requirements
- GIS: ESRIs ArcGIS 9.2.

Useful Websites
- www.gis.com
- www.esri.com
- www.ittvis.com/envi

Reference Text

Supplementary Readings

Assessment Scheme based upon:
- Attendance at Lectures
- Attendance at Labs
- Readings
- Assignments

Assessment Pattern
Grades will be based on:
- Class and Lab Participation 10%
- Practical work applied to urban planning 30%
- Unseen Mid-term Exam 20%
- Unseen Final Exam 40%

Total 100%

Learning Unit Contact Hours
- Lectures 3 hrs / week
- Tutorials 1.5 hrs / week
- Total class contact hours 63 hrs / semester
- Total self study hours 45 hrs / semester
- Total study hours 108 hrs / semester

Module Leader
Staff
AIMS

This module is designed to provide students with the basic camera operation, conceptual and technical photographic skills, sensitivity to light, color, and composition in photography. Techniques are introduced for photographing drawings and models, and the process of describing architectural exteriors and interiors fully. It examines historical and contemporary photographs and discuss the practice of architectural photography today.

SYLLABUS

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction and Overview</td>
</tr>
<tr>
<td>Short Outline of the History of Architectural Photography</td>
</tr>
<tr>
<td>Equipment and Techniques: Focal Length, Shutter, and Aperture</td>
</tr>
<tr>
<td>Photographic Seeing and Different Themes: Composition</td>
</tr>
<tr>
<td>Decisive Moment and Depth of Field</td>
</tr>
<tr>
<td>Photographing the Built Environment</td>
</tr>
<tr>
<td>Photographing of Buildings: the Exterior</td>
</tr>
<tr>
<td>Light and Shadow</td>
</tr>
<tr>
<td>Photographing the Interior</td>
</tr>
<tr>
<td>Lighting Workshop</td>
</tr>
<tr>
<td>Perception, Recognition, and Mental Image</td>
</tr>
<tr>
<td>Aesthetics in Photography</td>
</tr>
<tr>
<td>Photographing of Drawings and Models</td>
</tr>
</tbody>
</table>

Learning Outcomes

Knowledge

After completing this course students will be able to demonstrate knowledge and understanding of:

4. The usage of light and shadow to advantage in both exterior and interior photography.
5. How to photograph own drawings and models professionally.

Intellectual Skills

After completing this module, students will be able to:

8. Produce images that convey the experience of being in and around a built environment.
9. Enhance and manipulate images through the use of image-editing software, including perspective correction.

**Practical and Professional Skills**

*After completing this course students will be able to:*

1. Make a good presentation of own architectural photography work.
2. Come up with a good composition of the building and surroundings.

**General and Transferable skills**

*After completing this course students will be able to:*

1. Learn the elements of good architectural photography.

**Teaching/Learning Strategies**

- Lectures.
- Tutorials.
- Class presentation.
- Field trips.
- Individual Projects.
- Final exhibition

**Learning Materials**

**Software Requirements**

- Image-editing software

**Useful Websites**

- photo.net/learn/architectural/exterior
- www.nyip.com/ezine/techtips/interiors.html
- www.architecturalphotographyinc.com

**Reference Text**


**Supplementary Readings**


**Assessment Scheme based upon:**

- Readings Assignments.
- Quizzes.
- Field-Trip Deliverables
- Project(s).

**Assessment Pattern**

- Class Participation 5%
- Assignments 25%
- Field-Trip Deliverables 30%
- Final Project 40%

<table>
<thead>
<tr>
<th>Total</th>
<th>100%</th>
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</table>

**Learning Unit Contact Hours**

- Lectures 3 hrs / week
- Tutorials 1.5 hrs / week
- Total class contact hours 63 hrs / semester
- Total self study hours 45 hrs / semester
- Total study hours 108 hrs / semester

**Module Leader**

Staff
Module Code : ASE 454
Title : Working Drawings II
Level : 4
Credit Hours : 3
Prerequisites : ASE 364

AIMS
This module is designed to give students a coverage concerning working drawings through more detailed large scale drawings. Partial detailed wall sections which elaborate on the structural and constructional connections of the building are discussed. Door and window types are introduced along with door and window schedules. Room finish and interior finish schedules are also addressed. Additionally, the module addresses the issue of co-ordination between the various disciplines concerned with producing a complete set of construction documents through the preparation of structural, mechanical (sewage, plumbing and HVAC), and electrical (power and lighting) engineering drawings.

SYLLABUS

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partial Detailed Wall Sections.</td>
</tr>
<tr>
<td>Joints of Roofs.</td>
</tr>
<tr>
<td>Joints of Floors.</td>
</tr>
<tr>
<td>Door and Window Types.</td>
</tr>
<tr>
<td>Door and Window Schedules.</td>
</tr>
<tr>
<td>Interior Finish Schedules.</td>
</tr>
<tr>
<td>Electrical and Appliance Fixture Symbols.</td>
</tr>
<tr>
<td>Lighting Layouts.</td>
</tr>
<tr>
<td>Sanitary Systems.</td>
</tr>
<tr>
<td>Plumbing Fixture &amp; HVAC Symbols and Schedules</td>
</tr>
</tbody>
</table>

Learning Outcomes
Knowledge and Understanding
Upon successful completion of this module, students should be able to demonstrate knowledge and understanding of:

2. The process of preparation and interpretation of detailed drawings & finish schedules of the construction documents’ set for small buildings using traditional drawing and computer-aided drawing techniques.

3. The concepts, methods and techniques of installation of electrical, mechanical & sanitary building services including water, sewage, HVAC, lighting,…etc, systems.

Intellectual Skills
After completing this module, students will be able to:

1. Interpret and incorporate more detailed drawings & information into the architectural working drawings of a project.

2. Develop the sense of linking drawings of the various disciplines (structural, mechanical, and electrical) to the architectural set of drawings.

Practical and Professional Skills
After completing this module, students will be able to:
1. Co-ordinate and cross-check between the general architectural drawings and those of the other disciplines (structural, electrical (power and lighting), and mechanical (plumbing and HVAC).

**General and Transferable Skills**

After completing this module, students will be able to:

1. Prepare a complete set of construction documents including general architectural working drawings, structural drawings, electrical drawings, and mechanical (sanitary and HVAC) drawings.

**Teaching/Learning Strategies**

- Design Studios.
- Individual projects.
- Tutorials.

**Learning Materials**

**Software Requirements:**
- Auto-Cad.

**Useful Websites:**
- [http://www.arccat.com](http://www.arccat.com)
- [http://www.graphisoft.com](http://www.graphisoft.com)

**Reference Text:**

**Supplementary Readings:**

**Assessment Scheme**

- Weekly assignment (short assignments are to be submitted every week for correction and resubmission towards the final submission of the whole project.
- One-day architecture design sketch.
- Individual term project/paper.
- Jury for term project
- Unseen graphical Final Exam.

**Assessment Pattern**

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class participation</td>
<td>5%</td>
</tr>
<tr>
<td>Assignments</td>
<td>15%</td>
</tr>
<tr>
<td>Main project</td>
<td>40%</td>
</tr>
<tr>
<td>Unseen Final Exam</td>
<td>40%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
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</table>

**Learning Unit Contact Hours**

<table>
<thead>
<tr>
<th>Component</th>
<th>Hours per Week</th>
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<tbody>
<tr>
<td>Studios</td>
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</tr>
<tr>
<td>Lectures</td>
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<tr>
<td>Total class contact hours</td>
<td>63</td>
</tr>
<tr>
<td>Total self study hours</td>
<td>45</td>
</tr>
<tr>
<td>Total study hours</td>
<td>108</td>
</tr>
</tbody>
</table>

**Module Leader**

Staff
MAA UNIVERSITY
FACULTY OF ENGINEERING
MODULE OUTLINE

Module Code : CVL 455
Title : Steel Structures
Level : 4
Credit Hours : 3
Prerequisites : CVL 365

AIMS
This module is designed to provide students with a detailed overview of steel structure properties and material behaviour, static and dynamic loads, steel structure systems. Design of trusses, frames, purlins, columns, bracing, end-gables, bases, welded and bolted connections are also discussed. It also includes steel details, working drawings, roof and floor detailing. It introduces applications for 2nd and 3rd steel structures, domes and curved structures, suspended and stayed steel structures.

SYLLABUS

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structure Uses of Steel</td>
</tr>
<tr>
<td>Steel Architectural Structures.</td>
</tr>
<tr>
<td>Material, Behaviour and Loads.</td>
</tr>
<tr>
<td>Structural Investigation and Design.</td>
</tr>
<tr>
<td>Design of Steel Structure Systems.</td>
</tr>
<tr>
<td>Design of Steel Floors and Roofs</td>
</tr>
<tr>
<td>Details and Working Drawings</td>
</tr>
<tr>
<td>Applications</td>
</tr>
<tr>
<td>Details and Working Drawings</td>
</tr>
</tbody>
</table>

LEARNING OUTCOMES

Knowledge

After completing this course students will be able to demonstrate knowledge and understanding of:

1. The Examination of the behaviour and the analysis of steel structures.
2. The computations of all the necessary calculations needed for the design of such structures.

Intellectual Skills

After completing this module students will be able to:

1. Utilize steel in the design of space structures and solve seemingly difficult architectural structural problems.
2. Integrate architectural creative skills with civil mathematical skills to achieve a more comprehensive approach to design solutions.

Practical and Professional Skills

After completing this course students will be able to:
1. Design large span steel structural systems as roof covering of large span architectural spaces.
2. Provide full calculations & drawings of such structures.

**General and Transferable skills**

*After completing this course students will be able to:*

1. Recognize steel members’ usage and apply this knowledge in the design of steel structure forms.

---

**Teaching/Learning Strategies**

- Lectures
- Tutorials
- Class presentation

**Learning Materials**

**Useful Websites**

- [http://www.structsource.com](http://www.structsource.com)
- [http://www.mca1.org](http://www.mca1.org)
- [http://www.steel.org](http://www.steel.org)
- [http://www.steelstructures.com](http://www.steelstructures.com)
- [http://wwwcfr.msstate.edu/fwre](http://wwwcfr.msstate.edu/fwre)

**Reference Text:**

- Ambrose, J., Simplified Design of Steel Structures, John-Wiley & Sons., Inc.

**Assessment Scheme**

- Weekly written assignments (6 assignments).
- Short written quizzes (3 quizzes).
- Unseen written Mid-Term Exam.
- Unseen written Final Exam.

**Assessment Pattern**

- Class participation 5%
- Assignments 20%
- Tests and quizzes 15%
- Unseen Mid-Term Exam 20%
- Unseen Final Exam 40%

**Total** 100%

**Learning Unit Contact Hours**

- Lectures 3 hrs / week
- Tutorials 1.5 hrs / week
- Total class contact hours 63 hrs / semester
- Total self study hours per 45 hrs / semester
- Total study hours per 108 hrs / semester

**Module Leader**

Staff
Module Code: ASE 461
Title: Architectural Design VI
Level: 4
Credit Hours: 5
Prerequisites: ASE 451

AIMS
This module is designed to introduce students to increasingly complex and comprehensive design projects addressing all design issues: consideration of urban context, applying knowledge of theories and contemporary concepts in design, as well as the knowledge of CAD systems.

SYLLABUS

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large Project including Urban Design Considerations as well as the</td>
</tr>
<tr>
<td>Surrounding Context will be given.</td>
</tr>
<tr>
<td>Students are to be made aware that the use of Computer 3 D Software is</td>
</tr>
<tr>
<td>essential in Site Planning and Architectural Design.</td>
</tr>
<tr>
<td>The Project will deal specifically with Issues Concerning Conceptual</td>
</tr>
<tr>
<td>Analysis, Structural Consideration, and Incorporating Mechanical and</td>
</tr>
<tr>
<td>Electrical Systems in the Project Design.</td>
</tr>
<tr>
<td>Several Sketch Problems, as well as a series of Presentations and</td>
</tr>
<tr>
<td>Lectures by Guest Lecturers will be scheduled. Site Visits and similar</td>
</tr>
<tr>
<td>examples of Buildings will be very useful to the Students.</td>
</tr>
</tbody>
</table>

Project Examples:
- Convention center
- Urban design project (tourist village)
- Urban renovation scheme
- Modern buildings in historical contexts
- Large span projects such as: airports, stadiums, train stations, and sports arenas.

Learning Outcomes

Knowledge
After completing this course students will be able to demonstrate knowledge and understanding of:
1. The methods of dealing with a project brief whose programme requires the design of multi-functional uses in an urban context.
2. The concepts, methods and techniques of applying theories and contemporary design concepts in projects.
3. The preparation and presentations of building design projects in a variety of contexts, and of diverse scale and complexity.
4. The application of building codes and zoning regulations and how they affect the building design.

Intellectual Skills
After completing this module, students will be able to:
1. Develop and evaluate the complete building life cycle, from conception to realization.
2. Critically evaluate contemporary concepts of architectural projects.
3. Use contemporary multimedia tools for designing, modeling and presentation of architectural projects.
Practical and Professional Skills
After completing this course students will be able to:
1. Design creatively a variety of building types; in addition to urban renovation schemes with respect to the various approaches to the design process.
2. Develop and present architectural projects using an appropriate range of visual, verbal and written media, including both digital and non-digital methods.
3. Design and present a complete project using traditional drafting and computer-aided drawing techniques.

General and Transferable skills
After completing this course students will be able to:
3. Recognize the methodology of conceptual analysis of “green” architectural designs.

Teaching/Learning Strategies
- Studios.
- Computer laboratories.
- Class presentation.
- Field trips.
- Individual projects.

Learning Materials

Software Requirements:
- Auto-Cad, Archi-Cad, Adobe Photo-Shop,

Videos / Slides:
- Slide shows, Power Point presentations

Useful Websites
- http://www.greatbuildings.com
- http://www.architecture.com
- http://www.architectureweek.com

Reference Text:

Supplementary Readings:
- Selected References, Manuals, Catalogues, Data Books, Latest Ed.

Assessment Scheme
- Weekly graphical / computer assignments.
- One-day design sketch
- Individual term Project
- Final submission and jury.
- Unseen graphical Final Exam.

Assessment Pattern
- Design development including Sketches, critiques, final submission and jury 60%
- Unseen Final Graphical Exam 40%

Total 100%

Learning Unit Contact Hours
- Studios 6 hrs / week
- Lectures 1.5 hrs/week
- Total class contact hours 105 hrs / semester
- Total self study hours 75 hrs / semester
- Total study hours 180 hrs / semester

Module Leader
Staff
Module Code : ASE 462
Title : Housing Planning and Design
Level : 4
Credit Hours : 3
Prerequisites : ASE 363

AIMS
This module is designed to give students a complete coverage of housing theory, socio-economic aspects related to housing, alternative approaches to housing policy, and housing problems in developing countries. It explores the current issues affecting the formulation and implementation of housing programs. It covers an analysis of housing design, classification of housing types, data gathering on housing projects, and design procedures of housing communities.

SYLLABUS

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Introduction to the Field of Housing.</td>
</tr>
<tr>
<td>Standards &amp; Definitions: Basic Housing Unit, Dwelling Unit, Household, etc.</td>
</tr>
<tr>
<td>Surveying Housing Stock and Classification of Housing Problems.</td>
</tr>
<tr>
<td>Assessment of Future Housing Needs.</td>
</tr>
<tr>
<td>The Economic Theory of Housing: Housing Market, Supply &amp; Demand, etc.</td>
</tr>
<tr>
<td>Obstacles to Progress in Housing Provision: the Gap between Shelter Cost and Income, lack of Housing Finance, and absence of Local Building Industry.</td>
</tr>
<tr>
<td>Socio – Cultural Aspects Related to Housing; Distance, Density, etc.</td>
</tr>
<tr>
<td>Background on Public Policies, the Experience of the Developed Countries.</td>
</tr>
<tr>
<td>Classification of Housing Types.</td>
</tr>
<tr>
<td>Housing Needs and Family Cycle.</td>
</tr>
<tr>
<td>Components of Housing Design: the Apartment, Stairs, etc.</td>
</tr>
<tr>
<td>Design Methodology: Central Corridor System, Multi-Core System, etc.</td>
</tr>
<tr>
<td>Examples of Dwelling Forms and Cluster Design.</td>
</tr>
</tbody>
</table>

Learning Outcomes

Knowledge and Understanding
Upon completing this module, students will be able to demonstrate knowledge and understanding of:

4. The economic theory of housing and the socio-cultural aspects that affect the housing market.
5. The public policies of housing and alternative housing programs.
6. The classification of housing types and the major components of housing projects.
7. The factors influencing the formulation of effective housing policies.

Intellectual Skills
After completing this course students will be able to:

1. Classify the housing problems in Developing countries, particularly in Egypt.
2. Differentiate between public housing projects and policies, and those of alternative housing programs.
3. Analyze the factors influencing the formulation of effective housing policies.

**Practical and Professional Skills**

**After completing this course students will be able to:**
1. Classify housing types and the major components of housing projects.
2. Design neighborhoods, urban spaces and housing projects.

**General and Transferable Skills**

**After completing this course students will be able to:**
1. Survey and critically appraise the existing housing stock.
2. Assess future housing needs.
3. Research and evaluate many types of housing projects.

**Teaching/Learning Strategies**
- Lectures.
- Tutorials.
- Class presentation.
- Field trips.
- Individual term paper.

**Learning Materials**

**Videos / Slides:**
- Personal collection of different housing projects

**Useful Websites:**
- [http://www.urbanpolicy.berkeley.edu](http://www.urbanpolicy.berkeley.edu)
- [http://www.arch.vt.edu/CAUS/research/vchr/vchr.html](http://www.arch.vt.edu/CAUS/research/vchr/vchr.html)
- [http://www.jchs.harvard.edu/resources/university_and_research.htm](http://www.jchs.harvard.edu/resources/university_and_research.htm)

**Reference Text:**

**Supplementary Readings:**

**Assessment Scheme**
- Short written quizzes comprising definitions, true or false, multiple choice and essay questions (3 Quizzes).
- Individual term paper including a case study, a comprehensive analysis and detailed research of specific topic, student findings are to be summarized in the paper with a section for their conclusion and his/her recommendations.
- Main Project
- Unseen written Final-Exam.

**Assessment Pattern**
- Class participation: 5 %
- Quizzes: 10 %
- Tests: 10 %
- Term paper: 15 %
- Main Project: 20 %
- Unseen Final Exam: 40 %

**Total: 100%**
Leaning Unit Contact Hours

- Lectures: 3 hrs / week
- Tutorials: 1.5 hrs / week
- Total class contact hours: 63 hrs / semester
- Total self study hours: 45 hrs / semester
- Total study hours: 108 hrs / semester

Module Leader

Staff
Module Code: ASE 4631  
Title: History of Interior Design  
Level: 4  
Credit Hours: 3  
Prerequisites: ASE 353 & Min. 100 Cr.

AIMS

This module is designed to provide students with a broad historical survey of architectural interiors from the dawn of civilization to the present day. The survey includes interior environments (both public and private) of the various historic periods, historic artifacts, paintings, murals, texts, and others are also surveyed. The development of furniture through the ages is discussed. The development and change through history of interior design provides insight into the everyday life of people of all ages. It is undeniable that the life experience changes with the change in the interior environment we occupy. Social, economic, and political factors also influence our life pattern. All the influences which helped shape the internal environment of any given historic period are identified, therefore.

SYLLABUS

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>An Overview</td>
</tr>
<tr>
<td>Prehistoric Interiors</td>
</tr>
<tr>
<td>First Permanent Settlements</td>
</tr>
<tr>
<td>Classical Civilizations</td>
</tr>
<tr>
<td>Early Christian Interiors</td>
</tr>
<tr>
<td>Early Medieval: The Dark Ages</td>
</tr>
<tr>
<td>Later Middle Ages: The Gothic Style</td>
</tr>
<tr>
<td>Rise of Humanism: The Renaissance in Italy</td>
</tr>
<tr>
<td>Baroque and Rococo</td>
</tr>
<tr>
<td>England: Tudor, Elizabethan, Jacobean, Queen Anne &amp; Georgian</td>
</tr>
<tr>
<td>America: Colonial &amp; Federal Styles</td>
</tr>
<tr>
<td>Regency, Revivals, and Industrial Revolution</td>
</tr>
<tr>
<td>Victorian Era, Art Nouveau and the Viennese Secession</td>
</tr>
<tr>
<td>Modernism</td>
</tr>
<tr>
<td>Art Deco and Industrial Design</td>
</tr>
<tr>
<td>Late Twentieth Century Design</td>
</tr>
</tbody>
</table>

Learning Outcomes

Knowledge and Understanding
After completing this module, students will be able to demonstrate knowledge and understanding of:
1. Influences which helped shape the internal environment of historical periods.
2. The historical evolution of interior design with respect to various styles.
3. The different furniture styles of historical significance.
4. Designers who created the most influential furniture designs.

Intellectual Skills
After completing this module, students will be able to:
1. Critically evaluate concepts of the internal environment of historical periods.
2. Acquire skills to apply theories and styles of interior design in projects.

Practical and Professional Skills
After completing this module, students will be able to:
1. Apply theories and style of interior design in projects.

**General and Transferable Skills**

After completing this module, students will be able to:

1. Historical survey of architectural interiors from the old civilizations to the present day.

**Teaching/Learning Strategies**

- Lectures.
- Tutorials.
- Class presentation.
- Field trips.
- Individual Projects.
- Portfolios, performances, and exhibition.

**Learning Materials**

**Videos / Slides**

- Transparencies or colored slides to explain the detailed topic of the module

**Useful Websites**

- [http://www.designbasics.com/](http://www.designbasics.com/)

**Reference Text**


**Suggested Readings**


**Assessment Scheme**

- Periodic written assignments.
- Sketchbook
- Short quizzes.
- Individual term project(s).
- Written Final-Exam.

**Assessment Pattern**

- Class participation 5%
- Assignments 5%
- Sketchbook 5%
- Quizzes 5%
- Individual term projects 20%
- Unseen Mid-Term Exam 20%
- Unseen Final Exam 40%

| Total | 100% |

**Learning Unit Contact Hours**

- Lectures 3 hrs / week
- Tutorials 1.5 hrs / week
- Total class contact hours 63 hrs /semester
- Total self study hours 45 hrs /semester
- Total study hours 108 hrs /semester

**Module Leader**

Staff

**MSA UNIVERSITY**
此模块旨在发展学生对当代建筑中身份和遗产问题的认识。它讨论了形成穆斯林建筑基础的主要原则，并分析了它们的几何和精神底蕴。然后建议将这些原则适应到现代情况下。这是通过发展学生的合成能力来完成的，与分析能力相结合，以振兴穆斯林世界的遗产在建筑、艺术和工艺中，并适应到当代需求。

**SYLLABUS**

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Planimetric</strong></td>
</tr>
<tr>
<td>Point-line-shape, Silhouette, Vibrations, Variations, Positive-negative, Contrast, texture, Complementarity, Counterpoint, planning structure: dynamic</td>
</tr>
<tr>
<td><strong>Spatial</strong></td>
</tr>
<tr>
<td>Memory, Anecdotal, Narrative, Surprise, Geometry, Reactivity and Perception, Objectivity, The emotional, The elements, Static-structure and surface skin</td>
</tr>
<tr>
<td><strong>Sequential</strong></td>
</tr>
<tr>
<td>Scale, Remembrance, hierarchy of perceptions, folding and unfolding, veiling, movement in light, minor and major scales of composition, harmony, the power of the ensemble</td>
</tr>
<tr>
<td><strong>Meanings: Metaphors</strong></td>
</tr>
<tr>
<td>Order, God, chaos, darkness-light, paradise, arrangement and placement, diffusion and effusion, tranquility/disturbance, arithmetic and geometry, inversions and absurdities, the law-the out law</td>
</tr>
<tr>
<td><strong>The Pause</strong></td>
</tr>
<tr>
<td>Breath, mediator-illumination, seeing-believing, the spiritual, human aspirations</td>
</tr>
<tr>
<td><strong>Aniconism</strong></td>
</tr>
<tr>
<td>The void-nothingness, the deconstruction of structure, between inhaling and exhaling, the pregnancy of the moment, the finish line and the starting point, the cyclic vector upwards</td>
</tr>
</tbody>
</table>

**Learning Outcomes**

**Knowledge and Understanding**

After completing this module, students will be able to demonstrate knowledge and understanding of:

1. Basic Islamic principles of design and its elements.
2. The vocabulary of Islamic concepts of design, elements, materials, texture, static structure and surface skin.
3. The current debate in Arab world regarding the problem of architectural identity.

**Intellectual Skills**

After completing this module, students will be able to:

1. Develop skills in adapting basic Islamic principles of design and elements of design to contemporary needs.
2. Critically evaluate concepts of Islamic projects based upon Islamic concepts of design.
3. Acquire knowledge to apply vocabulary of Islamic concepts in contemporary projects.

**Practical and Professional Skills**
After completing this module, students will be able to:
2. Identify and understand Islamic Architecture Identity

**General and Transferable Skills**
After completing this module, students will be able to:
1. Theoretical background about contemporary Islamic models in Architecture.

**Teaching/Learning Strategies**
- Lectures
- Field trips
- Individual Projects
- Tutorials
- Class presentation

**Learning Materials**
**Videos/ Slides**
- Data show / Slide projector

**Useful Websites**
- www.muslimheritage.com
- www.akdn.org
- www.islamonline.net

**Reference Text**
- Critchlow, K. Islamic Patterns, Thames and Hudson, 1999.

**Supplementary Readings**

**Assessment Scheme**
- Readings
- Assignments
- Field-Trips
- Research work

**Assessment Pattern**
- Class Participation 10%
- Project + Research + Assignments 30%
- Unseen Mid - term Exam 20%
- Unseen Final Exam 40%

<table>
<thead>
<tr>
<th>Total</th>
<th>100%</th>
</tr>
</thead>
</table>

**Learning Unit Contact Hours**
- Lectures 3 hrs / week
- Tutorials 1.5 hrs / week
- Total class contact hours 63 hrs / semester
- Total self study hours 45 hrs / semester
- Total study hours 108 hrs / semester

**Module Leader**
Staff
**MSA UNIVERSITY**  
**FACULTY OF ENGINEERING**  
**MODULE OUTLINE**

<table>
<thead>
<tr>
<th>Module Code</th>
<th>ASE 4633</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title</td>
<td>History of Urban Form</td>
</tr>
<tr>
<td>Level</td>
<td>4</td>
</tr>
<tr>
<td>Credit Hours</td>
<td>3</td>
</tr>
<tr>
<td>Prerequisites</td>
<td>ASE 363 &amp; Min. 100 Cr.</td>
</tr>
</tbody>
</table>

**AIMS**

This module is designed to provide students with a broad historical survey of urban settlements from the beginning of civilization to the present day including both planned and unplanned urban growths and their determinants. The determinants of urban form include those which derive from natural geographical attributes such as topography, climate, and building materials; and those which are man-made such as economic, social, political and religious, etc. influences. Each of those determinants has played a part in the shaping of historic urban settlement, both organic growth and planned. The origins of human urban settlements are traced through an analysis of historic examples, with emphasis on the influences and planning principles which helped shape the traditional Arab-Islamic city.

**SYLLABUS**

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction &amp; Overview</td>
</tr>
<tr>
<td>Early Cities</td>
</tr>
<tr>
<td>Greek City States</td>
</tr>
<tr>
<td>Rome and the Empire</td>
</tr>
<tr>
<td>Medieval Towns</td>
</tr>
<tr>
<td>New Towns: The Bastides</td>
</tr>
<tr>
<td>Renaissance</td>
</tr>
<tr>
<td>Fortifications</td>
</tr>
<tr>
<td>France: 16th to 18th Centuries</td>
</tr>
<tr>
<td>Developments in Europe</td>
</tr>
<tr>
<td>Britain: 16th to mid-19th Centuries</td>
</tr>
<tr>
<td>Garden City Movement</td>
</tr>
<tr>
<td>Urban USA</td>
</tr>
<tr>
<td>Post World War II Urban Re-Structure</td>
</tr>
<tr>
<td>Islamic Cities of the Middle East</td>
</tr>
</tbody>
</table>

**Learning Outcomes**

**Knowledge and Understanding**

After completing this module, students will be able to demonstrate knowledge and understanding of:

1. Planning principles which shaped the traditional Arabic-Islamic city.
2. The various determinants which shaped urban settlements at any given period.
3. Historic examples of urban settlement.

**Intellectual Skills**

After completing this module, students will be able to:

1. Develop skills to apply historical knowledge in urban design projects.
2. Critically evaluate modern and contemporary urban projects.
3. Develop skills for selection of alternatives to contemporary urban problems.

**Practical and Professional Skills**

After completing this module, students will be able to:
1. Understanding principals of historical urban forms.

**General and Transferable Skills**

After completing this module, students will be able to:

1. Develop skills to design and evaluate contemporary urban planning.

### Teaching/Learning Strategies

- Lectures.
- Tutorials.
- Class presentation.
- Field trips.
- Individual Projects.
- Portfolios.
- Class presentations.
- Portfolios.

### Learning Materials

**Videos / Slides**
- Transparencies or colored slides to explain the detailed topic of the module

**Useful Websites**

### Reference Text


### Suggested Readings


### Assessment Scheme

- Periodic written assignments.
- Sketchbook
- Short quizzes.
- Individual term project(s).
- Written Final-Exam.

### Assessment Pattern

- Class participation: 5%
- Assignments: 5%
- Sketchbook: 5%
- Quizzes: 5%
- Individual term projects: 20%
- Unseen Mid-Term Exam: 20%
- Unseen Final Exam: 40%

**Total**: 100%

### Learning Unit Contact Hours

- Lectures: 3 hrs / week
- Tutorials: 1.5 hrs / week
- Total class contact hours: 63 hrs / semester
- Total self study hours: 45 hrs / semester
- Total study hours: 108 hrs / semester

**Module Leader**

Staff
Module Code : ASE 4634  
Title : Community Development Strategies  
Level : 4  
Credit Hours : 3  
Prerequisites : ASE 363 & Min. 100 Cr.

AIMS
This module is designed to enable students to explore the community development and the contributonal roles of civil institutions on the social, environmental, and urban levels. The community process, service and action, problem solving, visioning and action planning, capacity building and partnerships among private, public and non-profit entities. Students learn how to accept activities supporting community development urbanely, such as housing construction and maintenance, upgrading projects in informal settlements, raising public awareness about the importance of conserving buildings of historical value, dealing with the poor people, and solving their demands practically.

SYLLABUS

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community Development Concepts.</td>
</tr>
<tr>
<td>Main Pillars of a Sustainable Urban Community Development.</td>
</tr>
<tr>
<td>Obstacles of Urban Communities Development.</td>
</tr>
<tr>
<td>Phases of Community Development Process.</td>
</tr>
<tr>
<td>Community Development Strategies.</td>
</tr>
<tr>
<td>Enablement in the Urban Development Process.</td>
</tr>
<tr>
<td>Role of non-governmental organizations in urban development fields.</td>
</tr>
<tr>
<td>Role of non-governmental organization in the field of housing.</td>
</tr>
<tr>
<td>Role of non-governmental organizations in social, economic, environmental, and urban development.</td>
</tr>
<tr>
<td>Non-governmental organizations participation in the fields of environmental and cultural heritage conservation.</td>
</tr>
</tbody>
</table>

Learning Outcomes

Knowledge and Understanding
After completing this module, students will be able to demonstrate knowledge and understanding of:

1. The classification of the civil society and the framework of their institutions and roles towards its local community.
2. The concept of community development.
3. The system of enabling the civil sector to develop the community urbanely and environmentally.

Intellectual Skills
After completing this module, students will be able to:

1. Become familiar with the real local problems in the poor communities.
2. Critically review problems identifying, objectives, choosing alternatives and identifying guidelines for improving community services.
3. Train how to be a leader, communicator, facilitator, policy and decision-maker, overseer, and how to have the clear vision to develop the local community.

**Practical and Professional Skills**

**After completing this module, students will be able to:**
- Become familiar with real local problems in the poor communities.

**General and Transferable Skills**

**After completing this module, students will be able to:**
- Understand the classification of the civil society and the framework of their institutions and roles towards its local community.

**Teaching/Learning Strategies**

- Lectures.
- Tutorials.
- Field trips
- Team projects

**Learning Materials**

**Useful Websites**
- www.comm-dev.org
- www.hud.gov/offices/cpd/communitydevelopment/index.cfm

**Reference Text**
- Osman, Amal; The Integrated Role of Non-Governmental Organizations and Research Centers to Enhance the Development of Urban Environments, Faculty of Engineering- Cairo University, Giza, Egypt, 2008.

**Supplementary Readings**

**Assessment Scheme**

- Research Paper: about the community development through the NGOs.
- Team Project: Site visit to a local successful NGO in a poor community and analyzing its achievement.
- Unseen Mid-Term Exam.
- Unseen Final Exam.

**Assessment Pattern**

- Class Participation 5%
- Research Paper 10%
- Tests and Quizzes 5%
- Team Project 20%
- Unseen Mid-Term Exam 20%
- Unseen Final Exam 40%

Total 100%

**Learning Unit Contact Hours**

- Lectures 3 hrs / week

112
<table>
<thead>
<tr>
<th>Activity</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tutorials</td>
<td>1.5 hrs / week</td>
</tr>
<tr>
<td>Total class contact hours</td>
<td>63 hrs / semester</td>
</tr>
<tr>
<td>Total self study hours</td>
<td>45 hrs / semester</td>
</tr>
<tr>
<td>Total study hours</td>
<td>108 hrs / semester</td>
</tr>
</tbody>
</table>

**Module Leader**

Staff
MSA UNIVERSITY
FACULTY OF ENGINEERING
MODULE OUTLINE

Module Code : ASE 464
Title : Working Drawings III
Level : 4
Credit Hours : 4
Prerequisites : ASE 454

**AIMS**
This module is designed to focus on architectural details. It deals with the proper methods of producing details: their purpose and significance as an important part of the construction document. It emphasises construction, assemblies, joints and connections between the various construction materials, and the joining of materials especially wood in door and window assemblies. In addition to the traditional details, modern and contemporary construction methods and materials are discussed such as curtain wall details, skylights, etc.

**SYLLABUS**

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Door Details: Head and Jamb Details.</td>
</tr>
<tr>
<td>Miscellaneous Details (Fireplace, Closets, etc.).</td>
</tr>
<tr>
<td>Wood Joints.</td>
</tr>
<tr>
<td>Window Details (Wood).</td>
</tr>
<tr>
<td>Window Details (Metal).</td>
</tr>
<tr>
<td>Stair Details (Wood).</td>
</tr>
<tr>
<td>Stair Details (R.C. and Steel).</td>
</tr>
<tr>
<td>Bathroom and Kitchen Elevations.</td>
</tr>
<tr>
<td>Kitchen Cabinets Details.</td>
</tr>
</tbody>
</table>

**LEARNING OUTCOMES**

**Knowledge**

On successful completion of this module, students will be able to demonstrate knowledge and understanding of:

4. The preparation and interpretation of detailed drawings & tables constituting the construction documents for small buildings using traditional drawing and computer-aided drawing techniques.
5. Preparation of detailed drawings for interiors as well as preparation of workshop drawings and as-built drawings for a project.

**Intellectual Skills**

After completing this module, students will be able to:

3. Devise innovative solutions to constructional problems.
4. Develop the sense of linking drawings to realized buildings.

**Practical and Professional Skills**

After completing this module, students will be able to:
1. Solve constructional and assembly problems through proper detailing of critical joints between various construction materials.

**General and Transferable Skills**

After completing this module, students will be able to:

1. Use appropriate construction techniques and materials to specify and implement different details.

**Teaching/Learning Strategies**

- Design Studios.
- Tutorials.
- Individual projects.

**Learning Materials**

**Software Requirements**

- Auto-Cad.

**Useful Websites**

- [http://www.arccat.com](http://www.arccat.com)
- [http://www.graphisoft.com](http://www.graphisoft.com)

**Reference Text:**


**Supplementary Readings:**


**Assessment Scheme**

- Weekly graphical assignments: Students are required to submit weekly short assignments to be corrected and submitted again in the final format towards the end of the semester as part of the complete project.
- Individual term project.
- Jury of term project.
- Unseen graphical Final-Exam.

**Assessment Pattern**

- Class participation: 5%
- Assignments and reports: 15%
- Main Project: 40%
- Unseen Final Exam: 40%

<table>
<thead>
<tr>
<th></th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Learning Unit Contact Hours**

- Studios: 4.5 hrs / week
- Lectures: 1.5 hrs / week
- Total class contact hours: 84 hrs / semester
- Total self study hours: 60 hrs / semester
- Total study hours: 144 hrs / semester

**Module Leader**

Staff
Module Code : GSE 465
Title : Technical Service Systems II
Level : 4
Credit Hours : 2
Prerequisites : BSC162

AIMS
This module is designed to enable students to understand the various types of air conditioning systems, the properties of moist air, indoor air quality, thermal comfort, heat transmission in buildings, solar radiation, space heating and cooling loads. It also covers the basic knowledge on pumps, fans, ducts, piping, air handling units, room comfort zones, etc. It offers a general introduction to the design of electrical power systems, as well as waste disposal systems as they apply to buildings.

SYLLABUS

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Context for Building Systems Design.</td>
</tr>
<tr>
<td>Climate, Comfort, and Design Strategies.</td>
</tr>
<tr>
<td>Sites and Resources, Direct Sun and Daylight.</td>
</tr>
<tr>
<td>Design for Heating and Cooling.</td>
</tr>
<tr>
<td>Interior Air Quality, Sources and Impact, Passive and Low-Energy Approaches.</td>
</tr>
<tr>
<td>HVAC for Smaller Buildings, the need for Mechanical Equipments.</td>
</tr>
<tr>
<td>Large Buildings HVAC Systems.</td>
</tr>
<tr>
<td>Water and Basic Design, Water in Architecture, Basic Planning, Collection and Storage.</td>
</tr>
<tr>
<td>Water Supply, Water Quality, Filtration, Disinfecting, and Water Treatment.</td>
</tr>
<tr>
<td>Water and Waste, Principles of Drainage, Piping, Fittings, and Accessories.</td>
</tr>
<tr>
<td>Electric Demand Control, System Components, and Wiring in Buildings.</td>
</tr>
</tbody>
</table>

Learning Outcomes
Knowledge
After completing this course students will be able to demonstrate knowledge and understanding of:
1. The basic requirements of Mechanical and Electrical Systems in buildings.
2. The appropriate air conditioning solutions in buildings.
3. The supply and waste disposal systems, and the required levels and standards of sanitation in buildings.

Intellectual Skills
After completing this module, students will be able to:
1. Calculate space requirements and air conditioning capacities.
2. Choose the appropriate standard materials available in the market.
3. Propose the appropriate air conditioning system for a given building.

Practical and Professional Skills
After completing this course students will be able to:
1. Design the electrical power systems for buildings.
2. Design the air conditioning system and duct sizing for a small building.
3. Design the water supply and solid waste system for a small building.

**General and Transferable skills**

After completing this course students will be able to:
1. Analyse the requirements of human comfort in buildings.

**Teaching/Learning Strategies**

- Lectures.
- Tutorials.
- Individual Projects.

**Learning Materials**

**Useful Websites**

- [http://www.allbldg.com](http://www.allbldg.com)
- [http://www.ashrae.com](http://www.ashrae.com)
- [http://www.healthybuilding.net](http://www.healthybuilding.net)
- [http://www.aset.ab.ca](http://www.aset.ab.ca)

**Reference Text**


**Supplementary Readings**


**Assessment Scheme**

- Weekly written assignment.
- Short written quizzes.
- Laboratory tests.
- Unseen written Mid-Term Exam.
- Unseen written Final Exam.

**Assessment Pattern**

- Class participation 5%
- Assignments 15%
- Tests and quizzes 20%
- Unseen Mid-Term Exam 20%
- Unseen Final Exam 40%

<table>
<thead>
<tr>
<th>Total</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Learning Unit Contact Hours</strong></td>
<td></td>
</tr>
<tr>
<td>Lectures</td>
<td>3 hrs/week</td>
</tr>
<tr>
<td>Total class contact hours</td>
<td>42 hrs/semester</td>
</tr>
<tr>
<td>Total self study hours</td>
<td>30 hrs/semester</td>
</tr>
<tr>
<td>Total study hours</td>
<td>72 hrs/semester</td>
</tr>
</tbody>
</table>

**Module Leader**

Staff
500's LEVEL MODULES
Module Code: ASE 551
Title: Architectural Design VII
Level: 5
Credit Hours: 5
Prerequisites: ASE 461

AIMS
This module is the last architectural design course prior to the graduation project. It is designed to introduce students to other design disciplines related to the contextual environment, such as urban design, landscape and interior design. The student is required to integrate environment, community, culture, climate and micro-climate with other related issues in courses such as: Structures, CAD, Building Regulations, and technology. Programming, Design methodology and contemporary architectural approaches and movements should exert an influence on, and be part of, the design projects.

SYLLABUS

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Large Project includes Urban Design Consideration, as well as the Surrounding Context.</td>
</tr>
<tr>
<td>Awareness of the use of Computer 3 D Software as it is essential in Site Planning and Architectural Design.</td>
</tr>
<tr>
<td>The Project deals more specifically with Issues Concerning Conceptual Analysis, Structural Consideration, and Incorporating Mechanical and Electrical Systems.</td>
</tr>
<tr>
<td>Second project should include “Philosophy Idea”, which connected with the site of the project and depends on a potential of the site.</td>
</tr>
<tr>
<td>The studio time should not be divided in two days, three hours per day is actually not enough time for the staff to cover all the group members.</td>
</tr>
<tr>
<td>Several Sketch Problems, as well as a series of Presentations and Lectures to be given by Guest Lecturers.</td>
</tr>
<tr>
<td>Site Visits and similar examples of Buildings</td>
</tr>
</tbody>
</table>

Project Examples:
- Residential Complex.
- Cultural Centre.
- Health Resort.
- Cyber Centre or Intelligent Village.
- Olympic Village.
- University Campus.

Learning Outcomes

Knowledge

After completing this course students will be able to demonstrate knowledge and understanding of:

1. The importance of integrating all the information gathered from all studied courses in the design of the final project.
2. The preparation and presentation of design projects in a variety of contexts, and of diverse scale and complexity using manual drawing techniques as well as computer-aided drawing methods.

**Intellectual Skills**

*After completing this module, students will be able to:*
1. Write and present contextual analysis reports and documentations for professional presentations.
2. Perform SWOT analysis in the choice of site.
3. Systematically and creatively formulate sound architectural designs.

**Practical and Professional Skills**

*After completing this course students will be able to:*
1. Design a variety of building types from scratch in addition to the rehabilitation of existing buildings of value.
2. Integrate structural, mechanical and electrical systems in the architectural design of the project.

**General and Transferable skills**

*After completing this course students will be able to:*
1. Utilize the knowledge acquired from all other courses in the design process.

**Teaching/Learning Strategies**

- Studios.
- Computer laboratories.
- Class presentation.
- Field trips.
- Individual projects.

**Learning Materials**

**Software Requirements**

- Auto-Cad, Archi-Cad, Adobe Photo-Shop.

**Videos / Slides**

- Slide shows, Power Point presentations

**Useful Websites**

- [http://www.greatbuildings.com](http://www.greatbuildings.com)
- [http://www.architecture.com](http://www.architecture.com)
- [http://www.architectureweek.com](http://www.architectureweek.com)

**Reference Text:**


**Supplementary Readings:**

- Selected References, Manuals, Catalogues, Data Books, Latest Ed.

**Assessment Scheme**

- Weekly graphical / computer assignments
- One-day design sketch
- Individual term Project
- Final submission and jury.
- Unseen graphical Final Exam.

**Assessment Pattern**

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design development including weekly reviews, sketches, critiques, final submission and jury</td>
<td>60%</td>
</tr>
<tr>
<td>Unseen Final Graphical Exam</td>
<td>40%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>
### Learning Unit Contact Hours

<table>
<thead>
<tr>
<th>Contact Type</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Studios</td>
<td>6 hrs/week</td>
</tr>
<tr>
<td>Lectures</td>
<td>1.5 hrs/week</td>
</tr>
<tr>
<td>Total class contact hours</td>
<td>105 hrs/semester</td>
</tr>
<tr>
<td>Total self study hours</td>
<td>75 hrs/semester</td>
</tr>
<tr>
<td>Total study hours</td>
<td>180 hrs/semester</td>
</tr>
</tbody>
</table>

### Module Leader

Staff
Module Code : ASE 552
Title : Working Drawings IV
Level : 5
Credit Hours : 4
Prerequisites : ASE 464

AIMS
This module is designed to introduce students to the more advanced technological aspects of buildings. It expands on the traditional details and building systems in the previous modules by dealing with modern construction methods and materials. It addresses advanced structures, exterior envelopes, and contemporary construction materials. Curtain wall details, skylights, drywall assemblies: installation and finishing, internal and external cladding, panel construction, etc. will be addressed. Space truss connection details and joints, as well as large span structures, or multi-storey steel buildings might be dealt with in this module.

SYLLABUS

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Building Materials</td>
</tr>
<tr>
<td>Modern Building Techniques</td>
</tr>
<tr>
<td>Exterior Wall Finishing (Curtain Walls, Different Systems of Cladding,</td>
</tr>
<tr>
<td>Modern Finishing Materials… etc.).</td>
</tr>
<tr>
<td>Interior Wall Finishing (Internal Cladding Systems, Partitions, Drywall</td>
</tr>
<tr>
<td>Construction,… etc.).</td>
</tr>
<tr>
<td>Floor Finishing (Hard Flooring, Resilient Flooring, Soft Flooring,</td>
</tr>
<tr>
<td>Wood, Parquet, Marble, Tiles, Terrazzo, …etc.).</td>
</tr>
<tr>
<td>Ceiling (Reflected and False Ceiling, … etc.).</td>
</tr>
<tr>
<td>Trusses, Space Trusses, Space Frames, Cable Supported Roofs, Shells</td>
</tr>
<tr>
<td>and Folded Plates.</td>
</tr>
<tr>
<td>Specialty Details: Skylights, Operable Louvers,</td>
</tr>
<tr>
<td>Building Information Modelling (BIM).</td>
</tr>
<tr>
<td>Introduction to Specs &amp; BOQ.</td>
</tr>
<tr>
<td>Technological Studies in Design Projects.</td>
</tr>
</tbody>
</table>

LEARNING OUTCOMES

Knowledge and Understanding
Upon completion of this module, students will be able to demonstrate knowledge and understanding of:
6. The preparation and interpretation of detailed drawings & tables constituting the construction documents for a structurally advanced contemporary building using computer-aided drawing techniques.
7. Preparation of detailed drawings for interiors as well as preparation of workshop drawings and as-built drawings for a complex project.

Intellectual Skills
After completing this module, students will be able to:
4. Devise innovative solutions to advanced constructional problems.
5. Develop the sense of linking drawings to realized buildings.

Practical and Professional Skills
After completing this module, students will be able to:
1. Solve constructional and assembly problems through proper detailing of critical joints between various contemporary construction materials.

**General and Transferable Skills**
After completing this module, students will be able to:
3. Use appropriate modern construction techniques and new building materials to specify and implement different details.

**Teaching/Learning Strategies**
- Lectures.
- Tutorials.
- Studio
- Term project

**Learning Materials**

**Useful Websites:**
- [http://www.smartarch.com](http://www.smartarch.com)
- [http://www.designgrid.com](http://www.designgrid.com)
- [http://www.atdi.com](http://www.atdi.com)

**Reference Text:**

**Supplementary Readings:**
- Architectural details series.

**Assessment Scheme**
- Weekly graphical assignments: Students are required to submit weekly short assignments to be corrected and submitted again in the final format towards the end of the semester as part of the complete project.
- Individual term project.
- Jury of term project.
- Unseen graphical Final-Exam.

**Assessment Pattern**
- Class participation: 5%
- Assignments: 15%
- Projects: 20%
- Main Project: 40%
- Unseen Final Exam: 40%

<table>
<thead>
<tr>
<th>Total</th>
<th>100%</th>
</tr>
</thead>
</table>

**Learning Unit Contact Hours**
- Studios: 4.5 hrs / week
- Lecture: 1.5 hrs / week
- Total class contact hours: 84 hrs / semester
- Total self study hours: 60 hrs / semester
- Total study hours: 144 hrs / semester

**Module Leader**
Staff
Module Code: ASE 553
Title: Global Vernacular Architecture
Level: 5
Credit Hours: 3
Prerequisites: Minimum 120 Credits

AIMS
This module is designed to provide students with a general view of the indigenous architecture in different parts of the world, with particular emphasis on that in Egypt. It explores the factors affecting this type of architecture such as: climate, social and economic conditions, local building materials and construction methods. It highlights the growing demand in all countries for culturally acceptable housing and for regionally and contextually appropriate architecture, as well as for the conservation of the building heritage, traditional skills and environmental knowledge.

SYLLABUS

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vernacular Architecture</td>
</tr>
<tr>
<td>Nubian Vernacular Architecture</td>
</tr>
<tr>
<td>Arab and African Architecture</td>
</tr>
<tr>
<td>Building Materials: Clay</td>
</tr>
<tr>
<td>Traditional Construction Methods: Centered Dome</td>
</tr>
<tr>
<td>Traditional Construction Methods: Vault</td>
</tr>
<tr>
<td>Alternatives of Improved Clay Vernacular Architecture</td>
</tr>
<tr>
<td>Field Visits</td>
</tr>
<tr>
<td>Practical On- site Exercise.</td>
</tr>
</tbody>
</table>

LEARNING OUTCOMES

Knowledge
After completing this module, students will be able to demonstrate knowledge and understanding of:

8. The needs for the revival of vernacular architecture.
9. The principles behind the construction of domes and vaults in Egyptian traditional architecture.
10. The new improvements in clay as the main building material in Egyptian vernacular architecture.

Intellectual Skills
After completing this course students will be able to:
3. Analyse and evaluate vernacular architecture projects.
4. Use local building materials and traditional building techniques in the design of low-cost housing as an alternative solution for developing countries.

Practical and Professional Skills
After completing this course students will be able to:
1. Design vernacular architecture projects.
2. Supervise the building of centered domes and vaults using the traditional construction methods.

**Teaching/Learning Strategies**
- Lectures.
- Tutorials.
- Field trips.
- Class presentation.
- Group term paper.

**Learning Materials**

**Videos / Slides:**
- Personal collection
- Practical training

**Useful Websites:**
- [http://www.inhabitat.com/category/architecture](http://www.inhabitat.com/category/architecture)

**Reference Text:**

**Supplementary Readings:**

**Assessment Schemes**
- Short written quizzes.
- Group term paper.
- Unseen written Mid-Term Exam.
- Unseen written Final-Exam.

**Assessment Pattern**

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class participation</td>
<td>5%</td>
</tr>
<tr>
<td>Assignments</td>
<td>10%</td>
</tr>
<tr>
<td>Tests and quizzes</td>
<td>10%</td>
</tr>
<tr>
<td>Projects and reports</td>
<td>15%</td>
</tr>
<tr>
<td>Unseen Mid-Term Exam</td>
<td>20%</td>
</tr>
<tr>
<td>Unseen Final Exam</td>
<td>40%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

**Leaning Unit Contact Hours**

<table>
<thead>
<tr>
<th>Category</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lectures</td>
<td>3 hrs / week</td>
</tr>
<tr>
<td>Tutorials</td>
<td>1.5 hrs / week</td>
</tr>
<tr>
<td>Total class contact hours</td>
<td>63 hrs / semester</td>
</tr>
<tr>
<td>Total self study hours</td>
<td>45 hrs / semester</td>
</tr>
<tr>
<td>Total study hours</td>
<td>108 hrs / semester</td>
</tr>
</tbody>
</table>

**Module Leader**

Staff
AIMS

This module is designed to enable students to understand the various elements that affect human thermal comfort located in a certain building with the use of measurement tools & simulation software.

SYLLABUS

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Systems</td>
</tr>
<tr>
<td>Climates Elements / Climatic Measurement Tools</td>
</tr>
<tr>
<td>Human Comfort, Comfort Zones, Thermal Exchange, Clothing &amp; Activity Levels</td>
</tr>
<tr>
<td>Design Principles: The Building Environment</td>
</tr>
<tr>
<td>Computational Tools &amp; Simulation Software</td>
</tr>
<tr>
<td>Thermal Properties of Building Materials</td>
</tr>
<tr>
<td>Constructing an Architectural Model using Simulation Software</td>
</tr>
<tr>
<td>Cases of Building Orientation</td>
</tr>
<tr>
<td>Cases of Building Ventilation</td>
</tr>
<tr>
<td>Cases of Window Size in Elevations</td>
</tr>
<tr>
<td>Cases of Shading Devices in Elevations</td>
</tr>
<tr>
<td>Integration Case</td>
</tr>
</tbody>
</table>

LEARNING OUTCOMES

Knowledge

After completing this module, students will be able to demonstrate knowledge and understanding of:

1. The integration of the human requirements, while designing an architectural mass, in terms of human thermal comfort and the thermal performance of buildings.
2. The thermal performance of buildings through changing building orientation, location and size of windows, position of shading devices, etc.

Intellectual Skills

After completing this module, students will be able to:

1. Predict the thermal performance of buildings through changing building orientation, location and size of windows, position of shading devices, etc.
2. Specify building materials based on their thermal performance.

Practical and Professional Skills

After completing this module, students will be able to:

1. Design appropriate shading devices according to building orientation.
2. Calculate the energy consumption for any given building through computer programs.

General and Transferable Skills

After completing this module, students will be able to:

1. Propose an architectural mass with regards to the surrounding environmental impact.
2. Simulate a building’s thermal performance given climatic and microclimatic data using computer programs.

**Teaching/Learning Strategies**
- Lectures.
- Tutorials.
- Class presentation.
- Term projects paper.

**Learning Materials**

**Useful Websites:**
- [http://hed.arizona.edu/](http://hed.arizona.edu/)
- [www.eere.energy.gov](http://www.eere.energy.gov)

**Reference Text:**

**Supplementary Readings:**

**Assessment Scheme**
- Short written quizzes, consists of calculations, analysis of situation, problem solving and assessment of Software Outcomes (4 Quizzes).
- Individual term project, working on a case study to simulate a case and present the findings (1 term Project).
- Unseen written Final Exam.

**Assessment Pattern**
- Class Participation and Performance 5%
- Tests and quizzes 15%
- Individual Project 20%
- Oral Exam 20%
- Unseen Final Exam 40%

**Total 100%**

**Learning Unit Contact Hours**
- Lecture 3 hrs / week
- Tutorials 1.5 hrs / week
- Total class contact hours 63 hrs / semester
- Total self study hours 45 hrs / semester
- Total study hours 108 hrs / semester

**Module Leader**
Staff
## Module Outline

### AIMS

This module is designed to provide students with the essential knowledge to understand the principles of “green” design. It covers an analysis of sustainable or "green" building through the practice of designing, constructing, operating, maintaining, and removing buildings in ways that conserve natural resources and reduce their impact on climate change. Climatic and regional considerations, renewable resources, sustainable development, and ecologically-sensitive architecture. It provides the students with the necessary practical skills to be able to select the right materials and mechanical systems, and shows ways for the recycling of construction materials and building components in order to provide healthier environments for working, learning and living.

### SYLLABUS

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principles of a Green Architecture</td>
</tr>
<tr>
<td>Environmentally Sensitive, Ecological, Sustainable and Green Architecture Approach</td>
</tr>
<tr>
<td>Recycling of Construction Materials: Building Materials Wastage Types</td>
</tr>
<tr>
<td>Benefits from Waste Minimization/Recycling</td>
</tr>
<tr>
<td>Re-using of Building Components</td>
</tr>
<tr>
<td>Re-use of Demolished Building Materials</td>
</tr>
<tr>
<td>Assessment of Green Architecture Needs.</td>
</tr>
<tr>
<td>Leadership in Energy and Environmental Design (LEED): Sustainable Sites</td>
</tr>
<tr>
<td>Leadership in Energy and Environmental Design (LEED): Water Efficiency</td>
</tr>
<tr>
<td>Leadership in Energy and Environmental Design (LEED): Atmosphere Resources</td>
</tr>
<tr>
<td>Indoor Environmental Quality Innovation and Design Process</td>
</tr>
</tbody>
</table>

### LEARNING OUTCOMES

#### Knowledge

After completing this module, students will be able to demonstrate knowledge and understanding of:

11. The benefits of the “green” architecture approach.
12. The relationship between construction and environmental pollution.
13. The climatic and regional considerations that have to be considered during the design process.
14. The benefits of renewable energy resources.

#### Intellectual Skills

After completing this course students will be able to:

5. Perform technical environmental studies, analysis, and designs.
7. Raise consumer awareness of green building benefits

#### Practical and Professional Skills
After completing this course students will be able to:
1. Specify and re-use recycled building materials.
2. Design projects according to the principles of green architecture.
3. Select sites that are sustainable through LEED approved site selection studies.

General and Transferable Skills

After completing this course students will be able to:
1. Use LEED recommendations efficiently and effectively.

Teaching/Learning Strategies

- Lectures.
- Tutorials.
- Class presentation.
- Individual term paper.

Learning Materials

Videos / Slides:
- Personal collection of different housing projects

Useful Websites:
- http://www.inhabitat.com/category/architecture
- http://architecture.about.com/od/greenconcepts/g/green.htm
- www.greenbuilder.com/sourcebook/earthmaterials

Reference Text:

Supplementary Readings:

Assessment Schemes

- Short written quizzes (3 Quizzes).
- Individual term paper including a case study.
- Unseen written Mid-Term Exam.
- Unseen written Final-Exam.

Assessment Pattern

- Class participation 5%
- Assignments 10%
- Tests and quizzes 10%
- Projects and reports 15%
- Unseen Mid-Term Exam 20%
- Unseen Final Exam 40%

<table>
<thead>
<tr>
<th>Total</th>
<th>100%</th>
</tr>
</thead>
</table>

Learning Unit Contact Hours

- Lectures 3 hrs / week
- Tutorials 1.5 hrs / week
- Total class contact hours 63 hrs / semester
- Total self study hours 45 hrs / semester
- Total study hours 108 hrs / semester

Module Leader
Staff
Module Code : ASE 5534
Title : Human Settlements in Developing Countries
Level : 5
Credit Hours : 3
Prerequisites : ASE 462 & Min. 120 Cr.

AIMS
This module is designed to provide students with the theme of Human Settlements, especially Informal Settlements; its types, characteristics and methods of intervention in order to redevelop such areas. Hence, students will learn how to redevelop current informal areas.

SYLLABUS

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
</tr>
<tr>
<td>Definitions of Human Settlements</td>
</tr>
<tr>
<td>Types &amp; Characteristics of Informal Settlements</td>
</tr>
<tr>
<td>Methods of Intervention</td>
</tr>
<tr>
<td>Elements of Upgrading</td>
</tr>
<tr>
<td>Upgrading Process</td>
</tr>
<tr>
<td>Cost Control Methods</td>
</tr>
<tr>
<td>Analysis of Informal Areas: Potentials, Problems and Constraints</td>
</tr>
<tr>
<td>Final submission of the exercise.</td>
</tr>
</tbody>
</table>

Learning Outcomes

Knowledge
After completing this module, students will be able to demonstrate knowledge and understanding of:

1. The types of human settlements and especially informal settlements and the methods of upgrading such areas.
2. Methods of upgrading informal settlements.

Intellectual Skills
After completing this module, students will be able to:

1. Discern between formal and informal human settlements.
2. Differentiate between the different types of upgrading methods.

Practical and Professional Skills
After completing this module, students will be able to:

1. Redevelop an informal settlement according to the suitable methods of intervention.
2. Analyze current informal settlements and point out the potentials of upgrading.

General and Transferable Skills
After completing this module, students will be able to:

1. Choose the appropriate method of intervention for any given informal settlement.

Teaching/Learning Strategies
- Lectures.
- Tutorials.
- Field trips.
- Individual Projects.
• Class presentation.

**Learning Materials**

**Power point**
• Case studies

**Useful Websites**
• [www.citiesalliance.com](http://www.citiesalliance.com)
• [www.unhabitat.org](http://www.unhabitat.org)

**Reference Text**

**Supplementary Readings**
• Kipper, Regina et al., Cairo's Informal Areas, Between Urban Challenges and Hidden Potentials, GTZ, Cairo, 2009.

**Periodic written assignments.**
• Short Quizzes.
• Individual Term Project(s).
• Final-Exam.

**Assessment Pattern**

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class Participation</td>
<td>5%</td>
</tr>
<tr>
<td>Quizzes</td>
<td>10%</td>
</tr>
<tr>
<td>Individual Term Projects</td>
<td>25%</td>
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<tr>
<td>Unseen Mid-Term Exam</td>
<td>20%</td>
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<tr>
<td>Unseen Final Exam</td>
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</table>

**Total** 100%

**Learning Unit Contact Hours**

<table>
<thead>
<tr>
<th>Component</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lectures</td>
<td>3 hrs / week</td>
</tr>
<tr>
<td>Tutorials</td>
<td>1.5 hrs / week</td>
</tr>
<tr>
<td>Total class contact hours</td>
<td>63 hrs / semester</td>
</tr>
<tr>
<td>Total self study hours</td>
<td>45 hrs / semester</td>
</tr>
<tr>
<td>Total study hours</td>
<td>108 hrs / semester</td>
</tr>
</tbody>
</table>

**Module Leader**

Staff
Module Code: ASE 554
Title: Graduation Project (Part I)
Level: 5
Credit Hours: 2
Prerequisites: ASE 461 and Minimum 138 Credits

AIMS
This module is the first of two courses comprising the Graduation Project. It is
designed to provide the theoretical justification for the choice of project, and to enable
senior students to prepare their own project brief. The final report includes the data and
information needed, building design standards, the related building codes and zoning
regulations for the chosen building type, as well as maps of the selected site, site
analysis, and required areas for the project elements.

| Research / Orientation Session.                     |
| Project Selection.                                   |
| Programming: Project Elements, Data Gathering.      |
| Location and Site Analysis.                          |
| Data analysis, Data Presentation.                   |
| General Layout Planning and Schematic Design.       |
| Research Report Submission.                          |

Learning Outcomes
Knowledge
After completing this module, students will be able to demonstrate knowledge
and understanding of:
1. The application of proper research methods in the preparation of the report.
2. The methods of data gathering and how to discern between useful and useless
   information.
3. The interpretation of the gathered data and information.
4. The methods and techniques used in the analysis of data.
5. The implementation of SWOT analysis in the selection of site.
6. The significance of building codes and zoning regulations for the chosen site.

Practical and Professional Skills
After completing this module, students will be able to:
1. Prepare a well-researched analytical report.
2. Perform a SWOT analysis for a given site.
3. Prepare a well-documented project brief.
4. Present work in both oral and written form.

Intellectual Skills
After completing this module, students will be able to:
1. Use proper research methods in the preparation of the report.
2. Interpret and analyze appropriate data and information.
3. Critically appraise case studies of similar building types.

### Teaching/Learning Strategies

- Orientation Sessions.
- Review and Discussion Sessions.
- Research.
- Presentations.
- Site Visits.
- Presentations.
- Site Visits.

### Learning Materials

#### Software Requirements:

- Suitable software package.

#### Videos / Slides:

- Suitable textbooks and scientific journals in the field of the project.

#### Useful Websites:

- [http://www.archnet.com](http://www.archnet.com)
- [http://www.architecture.com](http://www.architecture.com)
- [http://www.riba.com](http://www.riba.com)

#### Supplementary Readings:

- Architectural Review, Architectural Digest, Architectural Record, etc.

### Assessment Scheme

#### Assessment Pattern

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research proposal</td>
<td>20 %</td>
</tr>
<tr>
<td>Part I: Presentation (Seminar)</td>
<td>10 %</td>
</tr>
<tr>
<td>Part II: Dissertation</td>
<td>20 %</td>
</tr>
<tr>
<td>Part II: Presentation (report + oral)</td>
<td>50 %</td>
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</table>

**Total 100%**

### Learning Unit Contact Hours

<table>
<thead>
<tr>
<th>Component</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sessions</td>
<td>3 hrs / week</td>
</tr>
<tr>
<td>Total class contact hours</td>
<td>42 hrs / semester</td>
</tr>
<tr>
<td>Total study hours</td>
<td>30 hrs / semester</td>
</tr>
<tr>
<td>Total other study hours</td>
<td>72 hrs / semester</td>
</tr>
</tbody>
</table>

### Module Leader

Project Advisor / Supervisor
Module Code: ASE 561
Title: Professional Practice and Building Regulations
Level: 5
Credit Hours: 3
Prerequisites: ASE 454

AIMS
This course is designed to provide students with an in depth coverage of the professional and legal aspects of architectural practice. It introduces the organizational side of the profession with emphasis on architectural firms/consultancy firms: firm’s structure, administration, client relationship, contractor relationship, related disciplines, contractual agreements, etc. The course also deals with the governing bodies of the profession: Egyptian Syndicate of Engineers, Architectural Society, and their equivalent in the USA and the UK (AIA, RIBA), etc. The history of the profession, the ethical, legal and economic framework, are also discussed. In addition, the course also addresses local building laws and zoning regulations.

SYLLABUS

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>History of the Profession.</td>
</tr>
<tr>
<td>The Contemporary Architectural Firm.</td>
</tr>
<tr>
<td>Structure of an Architectural Office.</td>
</tr>
<tr>
<td>Small, Medium-Sized and Large Firms.</td>
</tr>
<tr>
<td>Consultancy Firm.</td>
</tr>
<tr>
<td>Client/Architect Relationship.</td>
</tr>
<tr>
<td>Client/Contractor Relationship.</td>
</tr>
<tr>
<td>Architect/Contractor Relationship.</td>
</tr>
<tr>
<td>The Bidding Process.</td>
</tr>
<tr>
<td>Architectural Societies Affiliation.</td>
</tr>
<tr>
<td>Building Codes.</td>
</tr>
<tr>
<td>Zoning Regulations.</td>
</tr>
<tr>
<td>Fire Safety.</td>
</tr>
<tr>
<td>Planning for the Handicapped.</td>
</tr>
</tbody>
</table>

Learning Outcomes

Knowledge
After completing this course students will be able to demonstrate knowledge and understanding of:

1. The organisation of the structure of small-, medium-, and large-size architectural firms.
2. The conventional process, professional inter-relationships, & legal contexts within which buildings are realised, including building codes and zoning regulations.
3. How to earn professionalism for architects - their role in society and their legal and ethical responsibilities.
Intellectual Skills
After completing this course students will be able to:
1. Explore the contextual and legal issues relevant to architectural practice.
2. Interact critically with the institutional structures within which architectural practice takes place.

Practical and Professional Skills
After completing this course students will be able to:
11. Design creative, innovative and appropriate solutions taking into account the legal restraints (building codes and zoning regulations).
12. Cover in depth all relevant building regulations and codes.

General and Transferable skills
After completing this course students will be able to:
4. Organize the structure of small – medium and large – size architectural firms.
5. Criticize and analyze the building regulations and laws in Egypt and their applications in the real life examples.
6. Design and perform full calculation regarding several architectural elements according to building regulations and codes in Egypt.

Teaching/Learning Strategies
- Lectures.
- Tutorials.
- Individual and Team paper.
- Field Trips.

Learning Materials
Reference Text:

Supplementary Readings:
- Instructor’s Personal Notes and Handouts

Assessment Scheme
- Weekly written assignment.
- Short written quizzes.
- Individual term paper.
- Group term paper.
- Unseen written Mid-Term Exam.
- Unseen written Final-Exam.

Assessment Pattern
- Assignments 15%
- Tests and quizzes 10%
- Reports 15%
- Unseen Mid-Term Exam 20%
- Unseen Final Exam 40%

Total 100%

Learning Unit Contact Hours
- Lectures 3 hrs / week
- Tutorials 1.5 hrs / week
- Total class contact hours 63 hrs / semester
- Total self study hours 45 hrs / semester
- Total study hours 108 hrs / semester

Module Leader
Staff
Module Code : ASE 562
Title : Construction Management
Level : 5
Credit Hours : 3
Prerequisites : ASE 454

AIMS
This module is designed to help students acquire the vital knowledge of the bidding process and construction management of architectural projects. Students are introduced to client/architect, contractor/architect, and client/contractor relationships and responsibilities. Introduction to cost estimating in construction, quantity surveying, the tender bidding process and site supervision are also included. Managing the construction process, direct cost, overhead cost, mark up and profiles, cost recording and cost accounts are integrated within the course.

SYLLABUS

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction Industry.</td>
</tr>
<tr>
<td>Project Management Process.</td>
</tr>
<tr>
<td>Project Chronology: Preconstruction, Procurement Phase, Construction Phase, Project Close Out.</td>
</tr>
<tr>
<td>Construction Contracts: Types &amp; Delivery Methods.</td>
</tr>
<tr>
<td>Cost Estimation.</td>
</tr>
<tr>
<td>Scheduling: Fundamentals and Methods.</td>
</tr>
<tr>
<td>Network-Based Schedules.</td>
</tr>
<tr>
<td>Project Control: Progress Evaluation and Control.</td>
</tr>
<tr>
<td>Cost and Resource Control.</td>
</tr>
<tr>
<td>Cash Flow Analysis.</td>
</tr>
</tbody>
</table>

Learning Outcomes

Knowledge and Understanding

Upon completion of this course students will be able to demonstrate knowledge and understanding of:

1. The importance of project management in the construction process including, but not limited to, site supervision, financial planning, construction management together with the organizational aspects of architectural projects.
2. The method of preparation of a time schedule for the construction process of any project.
3. The cash flow analysis method in redeveloping the budget cost of a project.

Intellectual Skills

After completing this course students will be able to:

1. Write and present technical reports, documentation for professional presentations.
2. Estimate the cost of construction of a project.
3. Make an educated decision on which type of construction contract to choose for a given project.
Practical and Professional Skills

After completing this course students will be able to:
1. Prepare a time schedule for the construction process of a project.
2. Contribute to the management of a project that involves design and construction.
3. Use computer programs to evaluate the progress on site.

General and Transferable Skills

After completing this course students will be able to:
1. Manage available resources efficiently.
2. Manage the construction process effectively.
3. Control the cost and resources for a construction project.

Teaching/Learning Strategies

- Lectures.
- Tutorials.
- Class presentation.
- Team projects.

Learning Materials

Useful Website

- [http://www.vanir.com](http://www.vanir.com)
- [http://www.personal.rdg.ac.uk](http://www.personal.rdg.ac.uk)
- [http://www.thecontractorsgroup.com](http://www.thecontractorsgroup.com)

Reference Text


Supplementary Readings


Assessment Scheme

- Written assignments comprising true or false, multiple choice and essay questions (4 Assignments).
- Written quizzes comprising definitions, true and false, multiple choices and essay questions (3 Quizzes).
- Written tests.
- Unseen written Mid-Term Exam.
- Unseen written Final-Exam.

Assessment Pattern

- Class participation: 5%
- Assignments: 10%
- Tests and quizzes: 15%
- Unseen Mid-Term Exam: 20%
- Unseen Final Exam: 40%

Total: 100%

Learning Unit Contact Hours

- Lectures: 3 hrs/week
- Tutorials: 1.5 hrs/week
- Total class contact hours: 63 hrs/semester
- Total self study hours: 45 hrs/semester
- Total study hours: 108 hrs/semester

Module Leader

Staff
**AIMS**

This module is designed to provide students with the understanding of advanced techniques and practices used in large scale construction projects including high-rise structures. Students are familiarized with the latest systems used in the construction of buildings today, as well as, new structural systems with their capabilities, and the ability to decide which system would be the most suitable for each building type. Each system's behaviour to resist loads is examined, its technicalities, requirements and benefits are highlighted.

**SYLLABUS**

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slip form / self-climbing technique</td>
</tr>
<tr>
<td>Lift slab technique</td>
</tr>
<tr>
<td>Tunnel form technique</td>
</tr>
<tr>
<td>Flying forms</td>
</tr>
<tr>
<td>Tilt-up construction technique</td>
</tr>
<tr>
<td>Long spans concrete structures</td>
</tr>
<tr>
<td>Pre-stressed concrete technique</td>
</tr>
<tr>
<td>Membrane structures</td>
</tr>
<tr>
<td>Air supported structures</td>
</tr>
<tr>
<td>Steel cables and tension structures</td>
</tr>
</tbody>
</table>

**LEARNING OUTCOMES**

**Knowledge**

After completing this module students will be able to demonstrate knowledge and understanding of:

1. The advanced construction techniques utilized in the modern building industry.
2. The new special structures utilized in contemporary architecture

**Intellectual Skills**

After completing this module students will be able to:

1. Solve design problems related to limitations of construction techniques, large spans, and free forms.
2. Choose the appropriate construction technique for any given building type.
Practical and Professional Skills

After completing this module students will be able to:

1- Design large span structures using advanced construction techniques.

Teaching/Learning Strategies

- Lectures.
- Tutorials.
- Individual Projects.

Learning Materials

Software Requirements:
- Data shows for the applications of the new construction techniques in the modern building industry

Videos / Slides:
- Videos and Slides of examples of contemporary buildings utilized the special structural systems

Useful Websites:
- [http://www.archzine.com](http://www.archzine.com)

Reference Text:

Supplementary Readings:

Assessment Scheme

- Written assignments (4 assignments).
- Written quizzes (two 1.5hr. quizzes).
- Individual term project (One project).

Assessment Pattern

- Class participation 5 %
- Assignments 10 %
- Quizzes 5 %
- Project 20 %
- Unseen Mid-Term Exam 20 %
- Unseen Final Exam 40 %

<table>
<thead>
<tr>
<th>Total</th>
<th>100%</th>
</tr>
</thead>
</table>

Learning Unit Contact Hours

- Lectures 3 hrs / week
- Tutorials 1.5 hrs / week
- Total class contact hours 63 hrs / semester
- Total self study hours 45 hrs / semester
- Total study hours 108 hrs / semester

Module Leader

Staff
Module Code : ASE 5632  
Title : Building Safety and Security  
Level : 5  
Credit Hours : 3  
Prerequisites : GSE 465 & Min. 120 Cr.

AIMS
This module enhances students' knowledge of how to provide safety and security for the building users by better design and improved material and component selection. In addition to implementing related design criteria and guidelines for walls, floors, roofs, balconies, stairways, escalators, ramps, doors, and windows, the module familiarizes the student with the sufficient measures and design decisions to alleviate building-related accidents and ill health, crime and vandalism. Furthermore, it explores the applications of the fire code in different building types.

SYLLABUS

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety and security levels</td>
</tr>
<tr>
<td>Fundamentals of safety design</td>
</tr>
<tr>
<td>Fundamentals of security design</td>
</tr>
<tr>
<td>Health hazards</td>
</tr>
<tr>
<td>The perimeter and spatial environment</td>
</tr>
<tr>
<td>Spatial requirements for safety and security</td>
</tr>
<tr>
<td>Walls, floors, roofs, and balconies</td>
</tr>
<tr>
<td>Stairways and escalators</td>
</tr>
<tr>
<td>Doors and windows</td>
</tr>
<tr>
<td>Selection of building and finishing materials</td>
</tr>
<tr>
<td>Fire code and building design</td>
</tr>
</tbody>
</table>

LEARNING OUTCOMES

Knowledge
After completing this module students will be able to demonstrate knowledge and understanding of:

3. The design guidelines and criteria for safety and security requirements.
4. The applicable fire safety codes and emergency exits for all building types.

Intellectual Skills
After completing this module students will be able to:
1. Develop a checklist summarising design guidelines and criteria for the requirement of safety and security.
2. Apply fire safety codes and emergency exit guidelines for all building types.

Practical and Professional Skills
After completing this module students will be able to:
1. Design a building taking into account all safety precautions and security measures.
2. Design fire exits according to relevant codes.
General and Transferable Skills

After completing this module students will be able to:

1. Select and specify building finish materials that comply with the safety and security requirements.
3. Solve design problems related to safety and security of the building users in all building types.

Teaching/Learning Strategies

- Lectures.
- Tutorials.
- Individual Projects.

Learning Materials

Software Requirements:
- Data shows for the applications of the implementation of design guidelines and criteria related to the safety and security levels in different building types

Videos / Slides:
- Videos and Slides of examples of safety and security defects in building components

Useful Websites:
- [http://www.archzine.com](http://www.archzine.com)

Reference Text:
- Ching, Francis, Building Codes Illustrated, John Wiley, 2003

Supplementary Readings:

Assessment Scheme

- Written assignments (4 assignments).
- Written quizzes (two 1.5hr. quizzes).
- Individual term project (One project).

Assessment Pattern

- Class participation 5 %
- Assignments 10 %
- Quizzes 5 %
- Project 20 %
- Unseen Mid-Term Exam 20 %
- Unseen Final Exam 40 %

Total 100%

Learning Unit Contact Hours

- Lectures 3 hrs / week
- Tutorials 1.5 hrs / week
- Total class contact hours 63 hrs / semester
- Total self study hours 45 hrs / semester
- Total study hours 108 hrs / semester

Module Leader

Staff
MSA UNIVERSITY  
FACULTY OF ENGINEERING  
MODULE OUTLINE

<table>
<thead>
<tr>
<th>Module Code</th>
<th>: ASE 5633</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title</td>
<td>: Pre-Fabrication in Architecture</td>
</tr>
<tr>
<td>Level</td>
<td>: 5</td>
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<tr>
<td>Credit Hours</td>
<td>: 3</td>
</tr>
<tr>
<td>Prerequisites</td>
<td>: ASE 464 &amp; Min. 120 Cr.</td>
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</tbody>
</table>

**AIMS**

This module is designed to provide students with the basic understanding of the concept of pre-fabricated buildings and the implications of off-site fabrication in architecture. It addresses the types of pre-fabricated buildings and the development of the concept of pre-fabrication through history. It familiarizes students with pre-cast concrete structures, latest advances in techniques of fabrication, production processes, and assembly techniques. It provides an overview and understanding of junction types and long spans in pre-cast concrete structures. In addition, this module introduces students to the various methods of hybrid or semi-precast concrete structures where the advantages of both pre-cast and cast-in-situ techniques are integrated.

**SYLLABUS**

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Fabricated Buildings in History.</td>
</tr>
<tr>
<td>Types of Pre-Fabricated Buildings.</td>
</tr>
<tr>
<td>Pre-Cast Concrete Structures.</td>
</tr>
<tr>
<td>Pre-Cast Concrete Units.</td>
</tr>
<tr>
<td>Fabrication and Production Process.</td>
</tr>
<tr>
<td>Assembly Techniques.</td>
</tr>
<tr>
<td>Junction Types.</td>
</tr>
<tr>
<td>Long Spans in Pre-Cast Concrete Structures.</td>
</tr>
<tr>
<td>Semi-Precast Construction Technique.</td>
</tr>
<tr>
<td>Comparison of Pre-Cast and Semi-Precast Construction Techniques.</td>
</tr>
</tbody>
</table>

**LEARNING OUTCOMES**

**Knowledge**

After completing this module students will be able to demonstrate knowledge and understanding of:

1. Pre-cast concrete structures and their implications in architecture throughout history.
2. The latest advances in the techniques of fabrication and assembly of pre-cast concrete structures.
3. Hybrid or semi-precast concrete systems and their applications.

**Intellectual Skills**

After completing this module students will be able to:

1. Integrate the acquired knowledge of prefabricated systems to develop creative designs that adopt the concept of pre-fabrication.
2. Suggest which system of pre-fabrication to use for a particular project.

**Practical and Professional Skills**

After completing this module students will be able to:

1. Design buildings using the concept of pre-fabrication.
2. Suggest an appropriate pre-cast system for long-span structures.
General and Transferable Skills
After completing this module students will be able to:
1. Compare and analyse the latest advances in prefabricated structures to select which system of pre-fabrication to use for a particular project.

Teaching/Learning Strategies
- Lectures.
- Tutorials.
- Field trips.
- Individual Projects.

Learning Materials
Software Requirements:
- Data shows for the latest technological methods in the field of prefabricated building industry and its applications.

Videos / Slides:
- Videos and Slides of manufacturing and production process and methods of assembly

Useful Websites:
- http://www.archzine.com

Reference Text:

Supplementary Readings:

Assessment Scheme
- Graphical Assignments (4 assignments).
- Written Quizzes (two 1.5hr. quizzes).
- Individual Term Project (One project).
- Mid-Term Exam.
- Final Exam.

Assessment Pattern
- Class participation 5 %
- Assignments 10 %
- Quizzes 5 %
- Project 20 %
- Unseen Mid-Term Exam 20 %
- Unseen Final Exam 40 %

Total 100%

Learning Unit Contact Hours
- Lectures 3 hrs / week
- Tutorials 1.5 hrs / week
- Total class contact hours 63 hrs / semester
- Total self study hours 45 hrs / semester
- Total study hours 108 hrs / semester

Module Leader
Staff
**Module Code**: ASE 5634  
**Title**: Appropriate Building Technology  
**Level**: 5  
**Credit Hours**: 3  
**Prerequisites**: ASE 464 & Min. 120 Cr.

**AIMS**

This module is designed to help students explore the modern built environment through the impact of materials on architectural design applications. It is designed to familiarize students with the environmental implications of materials and their manufacture. It demonstrates the uses of different building materials such as brick, stone, lime, cement, mortar, timber, paint, concrete, plastics, glass and metal in the construction industry. Students learn the properties and chemical analysis of those materials and their impact on the environment. They learn how to choose sustainable materials and appropriate methods of construction to produce eco-friendly buildings and communities.

**SYLLABUS**

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classification of construction materials</td>
</tr>
<tr>
<td>Common construction materials, their properties, manufacture and applications</td>
</tr>
<tr>
<td>Composite materials and their applications</td>
</tr>
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<td>Impact of materials properties on construction techniques</td>
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<td>Environmental considerations in the application of materials in construction context</td>
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<td>Design considerations in the application of materials in the construction context</td>
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<td>Internal Finishing Materials:</td>
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<td>External Finishing Materials</td>
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<td>Landscaping Finishing Materials.</td>
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**Learning Outcomes**

**Knowledge**

After completing this module, students will be able to demonstrate knowledge and understanding of:

  5. The wide array of materials needed in the field of construction and finishings.
  6. The current building materials and construction techniques and trends for the future of the building industry.
  7. The environmental implications of materials and their manufacture process.

**Intellectual Skills**

After completing this module, students will be able to:

  1. Use appropriate classification systems for categorizing materials utilized in construction.
  2. Compare and analyse the properties of different finishing materials.
  3. Choose the appropriate sustainable building materials and the environmentally-friendly building techniques.

**Practical and Professional Skills**

After completing this module, students will be able to:

  1. Make decisions on the selection and application of construction materials to defined design situations.
2. Apply eco-systems in architectural design.

**General and Transferable Skills**

**After completing this module, students will be able to:**

1. Consider the environmental implications of materials and their manufacturing process while attempting to design eco-friendly buildings and communities.
2. Assess the impact of materials’ properties on construction techniques.

**Teaching/Learning Strategies**

- Lectures.
- Tutorials.
- Field trips.
- Team projects.

**Learning Materials**

**Useful Websites**

- [http://www.construction-chemistry.com](http://www.construction-chemistry.com)

**Reference Text**


**Supplementary Readings**


**Assessment Scheme**

- Short quizzes comprised of definitions, true or false and multiple choice (3 Quizzes).
- Class tests comprising of definitions, true or false, multiple choice and sketching (3 Tests).
- Group term projects to collect various samples of different finishing materials and survey the market for availability of the latest developed materials (2 Projects).
- Unseen Mid-Term Exam.
- Unseen written Final Exam.

**Assessment Pattern**

- Class participation 5%
- Tests and quizzes 15%
- Projects 20%
- Mid-Term Exam 20%
- Unseen Final Exam 40%

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<th>Total</th>
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**Learning Unit Contact Hours**

- Lectures 3 hrs / week
- Tutorials 1.5 hrs / week
- Total class contact hours 63 hrs / semester
- Total self study hours 45 hrs / semester
- Total study hours 108 hrs / semester

**Module Leader**

Staff
AIMS
This module is the second of the two courses comprising the Graduation Project. Following the preparation of the project report (Part I) comes the design of the project itself (Part II). The module is designed to enable senior students to design a complete architectural project using the fundamentals, principles and skills they gained during their course of study. It translates the project brief, site selection and site analysis developed in Part I, into a complete project taking into account the environmental, social, cultural and political aspects while satisfying all applicable code and regulation requirements, and being structurally sound.

| Design Development of Layout. |
| Detailed Design of Floor Plans. |
| Sections and Elevations. |
| Technical Studies and Details. |
| Architectural and Landscaping Details. |
| Perspectives and Models. |
| Submission and Presentation of Final Project. |

Learning Outcomes

Knowledge
After completing this module, students will be able to demonstrate the knowledge and understanding of:

7. The preparation and presentation of a large scale architectural project of a complex nature.
8. The relevant building codes and zoning regulations for the particular building type and selected site.
9. The concepts and techniques of the structural and mechanical systems used.
10. The principles of advanced building technologies and how they impact the surrounding environment.

Practical and Professional Skills
After completing this module, students will be able to:

5. Design a large scale project of a complex nature.
6. Prepare preliminary drawings using various representation techniques including manual and computer-aided drawings and visual aids.
7. Prepare complete drawings including structural system details, and technical details and environmental design (acoustics, lighting, climatic control, etc.).
8. Display imagination and creativity.
**Intellectual Skills**

After completing this module, students will be able to:

1. Translate the written project brief developed in the Graduation Project report (Grad I) into a drawn design project.
2. Produce innovative design concepts.
3. Produce designs within the constraints imposed by building codes and zoning regulations.
4. Exhibit a general awareness of the history and theories of Architecture and their impact on design.

**Teaching/Learning Strategies**

- Design Sessions.
- Review and Discussion Sessions.
- Research.
- Presentations.
- Site Visits.

**Learning Materials**

**Software Requirements:**

- Suitable software package.

**Videos / Slides:**

- Suitable textbooks and scientific journals in the field of the project.

**Useful Websites:**

- [http://www.archnet.com](http://www.archnet.com)
- [http://www.architecture.com](http://www.architecture.com)
- [http://www.riba.com](http://www.riba.com)

**Supplementary Readings:**

- Architecture, Architectural Digest, Architectural Review, Architectural Record, etc.

**Assessment Scheme**

**Assessment Pattern**

- Design development (5 Reviews) 60%
- 1st final jury (Project+oral defense) 20%
- 2nd jury (revised project) 20%

Total 100%

**Learning Unit Contact Hours**

- Studios 6 hrs / week
- Lectures 1.5 hrs / week
- Total class contact hours 105 hrs / semester
- Total study hours 75 hrs / semester
- Total other study hours 180 hrs / semester

**Module Leader**

Project Advisor / Supervisor