Course Curriculum

(Course Structure and Syllabi)

for

Bachelor Programme

(B.Arch.)

First Year

राष्ट्रीय प्रौद्योगिकी संस्थान हमीरपुर

हमीरपुर – 177 005 (भारत)

National Institute of Technology Hamirpur

Hamirpur – 177 005 (India)

http://www.nith.ac.in

Preface

Located in Hamirpur district of Himachal Pradesh, NIT Hamirpur enjoys a really scenic environment and pleasant weather. The Institute was established in the year 1986, as REC Hamirpur, converted as NIT Hamirpur in 2002 and declared as the Institute of National Importance in 2007. The Institute awards Bachelor, Master and Doctoral degrees in Engineering, Sciences, Humanities & Social Sciences, Architecture and Management; fostering the spirit of national integration amongst the students, a close interaction with industry and a strong emphasis on research. At present, the Institute offers four years B.Tech. degree in Civil Engineering, Computer Science & Engineering, Electrical Engineering, Electronics & Communication Engineering, Mechanical Engineering, Chemical Engineering and Material Science & Engineering, and a five years B.Arch. degree. The Institute has also introduced five years Dual Degree leading to Bachelor and Master of Technology in Computer Science & Engineering and Electronics & Communication Engineering. The Institute also offers M.Tech./M.Arch./M.Sc./MBA programmes with various specializations.

The Bachelor programmes of NIT Hamirpur are governed by the Ordinances for Bachelor Programmes which is available on the Institute website for the information of students and other stakeholders. First year students are advised to get fully familiar with the academic system of the Institute and provisions contained in these Ordinances. These provisions govern the policies and procedures on the admission of students, registration for courses, imparting instructions of courses, conducting examinations, evaluation, award of degree based upon performance of the students, etc. Further, students are advised to read few important points mentioned in the Ordinances like change of branch, evaluation and grading system of the Institute, minimum attendance requirement, etc. Moreover, NIT Hamirpur believes that duty, decorum and discipline are the trademarks of a good student, therefore, students are advised to read conduct and discipline rules in the Ordinances carefully and conduct themselves within and outside the precincts of the Institute in a manner befitting the students of an Institute of National Importance.

Students are also advised to go through the Academic Calendar available on the Institute website. The Academic Calendar mentions of the dates of all the important events, such as Admission, Registration, Commencement & End of the Classes, Examinations & Evaluation, Submissions of Grades, Mid-semester/Summer/Winter Breaks, etc., during the Academic Session of the Institute.

A number of Stipends, Scholarships, Endowment Scholarships/Fellowships, etc. are also awarded to the Bachelor students according to the rules and procedures laid down by the awarding agencies and/or Institute from time to time. Further, to promote and recognize academic excellence, constructive leadership and overall growth and development of students, the Senate may award a number of Prizes and Medals, established by the Institute on its own or through endowments/grants made by donors, with the approval of the Board of Governors.

It is in the interest of the student that he/she should be fully familiar with the course curriculum, academic system of the Institute and provisions contained in Bachelor Ordinances.

Director's Message

Greetings and a warm welcome to all the new entrants for joining us at National Institute of Technology Hamirpur. Congratulations for selecting National Institute of Technology Hamirpur, for your further studies and college experience. NIT Hamirpur is one of the premier autonomous Institution of National Importance in Northern India under the Act of Parliament-2007. It is a state of art Institution and a dream destination for those who wish to be leaders in Science and Technology. Besides being recognized nationally and internationally for excellent education at undergraduate level, we are also making wide strides in innovative research and other development activities. Being a National Level Institute, we have a unique group of outstanding young minds from almost all corners of the country.

Students from diverse backgrounds get to network with each other and get to identify and comprehend the wide spectrum of varied cultural and regional practices in our country. Students are not only given exposure to the latest technological advances in their chosen field but also trained to be responsible citizens of our country. The rich and unique learning environment at NIT Hamirpur develops the student physically, intellectually and emotionally. A series of activities such as cultural festival, technical festival, industry-focused seminars and extracurricular activities, open them to challenges of leadership. We not only enable our students to fulfill their dreams but also mentor them to think Big. During their tenure at the Institute, the students are given enriching and life-defining experience that enables them to reach new heights in their professional and personal lives.

The Institution has a team of highly qualified, learned and dedicated faculty with expertise in all major disciplines of engineering and technology, architecture, science and management, and is a constant source of inspiration for the students. They are actively involved in raising the standards of not only our Institute but also other institutions by collaborating with them and by sharing knowledge through faculty/student interaction programmes from time to time.

Once again, I wish all the students an outstanding, momentous and valuable stay at NIT Hamirpur and hope that you achieve your destinations/goals and emerge as top-notch engineers, technocrats, educationists or scientists.

With warm wishes

Prof. Lalit Kumar Awasthi
Director
National Institute of Technology Hamirpur
Hamirpur (H.P.) – 177 005
Email: director@nith.ac.in

उद्यमेन हि सिध्यन्ति कार्याणि न मनोरथै:

परिश्रम करने से ही सारे कार्य सिध हो सकते हैं केवल इच्छाओं से नहीं

Institute Vision

To build a vibrant multicultural learning environment founded on value based academic principles, wherein all involved shall contribute effectively, efficiently and responsibly to the national and global community.

Institute Mission

- To achieve academic excellence in engineering, technology, architecture and science by imparting quality and value based education.
- To inspire our students to become responsible citizens and competent professionals with high ethical values.
- To meet the expectations of technical human resource at national and international level.

Objectives of Bachelor and Dual Degree Programmes

The objectives of the Bachelor/Dual Degree Programmes at the National Institute of Technology Hamirpur are as follows:

- To cultivate high standards of performance in teaching and research
- To develop the scientific, engineering and managerial manpower of the highest quality to cater to the needs of the industry, R&D organizations and academia
- To provide opportunity to students to do research in cutting edge areas
- To be a role model and leader of educational institutions in the country
- To provide a broad grasp of the fundamental principles of the scientific, technological and managerial methods through its curriculum
- To provide a deep understanding of the specific areas of specialization
- To provide an innovative ability to solve new and open problems
- To provide a capacity to learn continually and interact with multi-disciplinary groups
- To develop the students with a capability for free and objective enquiry, courage and integrity, awareness and sensitivity to the needs and aspirations of society and doing independent research in their chosen areas

With above objectives in mind, the course curriculum of Bachelor/Dual Degree Programmes is designed to include components like theory and practical course works, seminars and projects, through which a student can develop his/her concepts and intellectual skills.

Bachelor Programmes

Bachelor of Technology (B.Tech.): 4 Years (8 Semesters)

Branch	Department
Chemical Engineering	Chemical Engineering
Civil Engineering	Civil Engineering
Computer Science & Engineering	Computer Science & Engineering
Electrical Engineering	Electrical Engineering
Electronics & Communication Engineering	Electronics & Communication Engineering
Materials Science & Engineering	Material Science & Engineering
Mechanical Engineering	Mechanical Engineering

Bachelor of Architecture (B.Arch.): 5 Years (10 Semesters)

Branch	Department
Architecture	Architecture

Dual Degree Progranmmes

Dual Degree (B.Tech. & M.Tech.): 5 Years (10 Semesters)

Branch	Department
Computer Science & Engineering	Computer Science & Engineering
Electronics & Communication Engineering	Electronics & Communication Engineering

First Year													
1st Semester							2nd Semester						
SN	**Code**	**Subject**	**L**	**T**	**P/D**	**Credits**	**SN**	**Code**	**Subject**	**L**	**T**	**P/D**	**Credits**
1	AR-111	Architectural Design-I	3	0	5	6	1	AR-121	Architectural Design-II	3	0	5	6
2	AR-112	Building Construction & Materials-I	2	0	4	4	2	AR-122	Building Construction & Materials-II	2	0	4	4
3	AR-113	History of Architecture-I	3	1	0	4	3	AR-123	History of Architecture-II	3	1	0	4
4	AR-114	Architectural Drawing & Graphics-I	2	0	4	4	4	AR-124	Architectural Drawing & Graphics-II	2	0	4	4
5	AR-115	Disaster Management	3	1	0	4	5	AR-125	Architectural Workshop	1	0	3	3
6	MA-116	Architectural Mathematics	3	1	0	4	6	HS-126	Communication Skills	2	1	2	4
		Total	**Hours = 32**			**26**			**Total**	**Hours = 33**			**25**

Course Name: **Architectural Design-I**

Course Code: **AR-111**

Course Type: **Core**

Contact Hours/Week: **3L + 5D** Course Credits: **06**

Course Objective

To Train the students in visual compositions by using various elements of Design and to make them familiar with the meaning and purpose of Architectural design

Unit Number	Course Content	Lectures
UNIT-01	Study of distinctive aspects of Architecture, inter-linkages between Architecture, Nature and Culture, unique aspects of Architectural profession, Requirements and qualities of a student of architecture.	**06L**
UNIT-02	Introduction to the Concept of design in everyday life, Objectives of design, Elements of design such as point- Line- Form- Space- Texture- Colour etc. Detailed study of color theory and its applications through geometric compositions. Principles of design such as Scale- Balance- Proportion- Rhythm- Harmony- Contrast- etc. Application of the same through exercises in two and three dimensional compositions; using single and multiple types of elements.	**12L**
UNIT-03	Introduction to Anthropology, Anthropometric data for adults& children:Standing position front & side- Arms extended- various seating positions-various working positions.	**09L**
UNIT-04	Habitable space such as Living Room, Dining Room, Bedroom, Kitchen&Toilet with furniture layout 1. Planning and Design considerations 2. Design Process	**09L**

Course Outcomes

Upon successful completion of the course, the students will be able to

CO1: Introducing the basics of Architectural profession

CO2: Describe the process of design

CO3: Learn the various human dimensions and its applications

CO4: Application of the process of design

Books and References

1. Design through Discovery by M.E. Bevlin, Harcourt Brace College Publishers, University of Wisconsin, 1994.
2. Drawing and Perceiving by Douglas Cooper, John Wiley & Sons, New York, 2007.
3. Principles of Design in Architecture by K.W. Smithies, Van Nostrand Reinhold, New York, 1981.
4. Architectural Drawing Masterclass by Tom Porter, Charles Scribner's, London, 1993.
5. Time-Saver Standards for Architectural Design: Technical Data for Professional Practice by Michael J. Crosbie and Donald Watson, McGraw-Hill, New York, 2005.
6. Time Saver Standards for Building Types by Joseph De Chiara and Michael J. Crosbie, McGraw-Hill, New York, 2001.
7. Architectural Graphic Standards by Charles George Ramsey, Harold Reeve Sleeper, Bruce Bassler John Wiley & Sons, New York, 2008.
8. Form Space & Order by Francis DK Ching, John Wiley & Sons, New Jersey, 2015.

Course Name: **Building Construction and Materials-I**
Course Code: **AR-112**
Course Type: **Core**

Contact Hours/Week: **2L + 4D** Course Credits: **04**

Course Objective

To familiarize the students with basic building materials and their construction details

Unit Number	Course Content	Lectures
UNIT-01	Behavioral characterisitcs and applications of basic building materials- brick, stone, lime, cement, sand: Application, properties and defects. Building components- wall, floor, roof and foundation Construction terminology through typical section.	**06L**
UNIT-02	Stones- Process of rock formation, types, properties, applications etc. Bricks – Constituents and properties of soil, manufacturing, types, sizes, properties and uses.	**06L**
UNIT-03	Building construction techniques in brick and stone masonary Various types of bonding in walls such as Stretcher bond-English bond-Single & Double Flemish bond etc. These bonds are to be explained with respect to varying wall thickness such as ½ brick-1 brick- 1½ brick etc. and various types of junctions such as L junction- T junction- Cross junction etc. Stone masonry of various types such as Rubble walling, Polygonal walling, Flint walling, Ashlars walling, Masonry joints, Maintenance etc.	**12L**

Course Outcomes

Upon successful completion of the course, the students will be able to

CO1: Study of building materials.
CO2: Understand the Constituents, properties and Manufacturing process of building materials
CO3: Learn to draw brick masonary and stone masonary

Books and References

1. Building Construction by Sushil Kumar, Standard Publishers Distributors, New Delhi, 2006.
2. Building Construction Metric Vol. 1-2 by W.B.Mckay, Orient Longman Private Limited, Mumbai, 2006.
3. Building Construction Illustrated by Francis D.K. Ching, John Wiley & Sons, New York, 2011.
4. Construction Technology, Vol. 1 by Roy Chudley, Roger Greeno,Prentice Hall, London, 2005.
5. Appropriate Building Materials by Roland Stulz and Kiran Mukerji, SKAT, 1993.
6. A Textbook of Building Construction by S.P. Arora and S.P.Bindra, Dhanpat Rai & Sons, Delhi, 1996.

Course Name: **History of Architecture–I**
Course Code: **AR-113**
Course Type: **Core**

Contact Hours/Week: **3L + 1T** Course Credits: **04**

Course Objective

To understand evolution and development of architectural and urban built environment in context to geophysical, social and technological factors

Unit Number	Course Content	Lectures
UNIT-01	Introduction to Indus Valley civilization. Study of architectural characteristics. Introduction to the Vedic village. Study of its building typology and construction.	**06L**
UNIT-02	Introduction to Buddhist settlement in India. Detailed studies of Architectural characteristics of various building types such as Stupas, Chaityas and Viharas through suitable examples from each geographical context to illustrate differences in Form, Construction methods and Ornamentation.	**06L**
UNIT-03	Study of evolution of Hindu architecture, Rock-cut and structural forms and comparison of Temple forms in various regions of India. Study of various styles of temples such as Dravidian, Indo-Aryan Orissan, Jain with respect to functional components, architectural Form, construction and ornamentation.	**12L**
UNIT-04	Delhi or Imperial Style :Slave, Khilji, Tughlaq, Sayyed, Lodhi Provincial Style Bengal , Jaunpur, Deccan, Malwa, Bijapur Moghul Architecture in North India under : Humayun, Jehangir, Akbar, Shahjehan	**12L**

Course Outcomes

Upon successful completion of the course, the students will be able to

CO1: Understand the architectural characteristics of Indus Valley civilization and Vedic village
CO2: Understand the architectural characteristics of Buddhist settlement in India
CO3: Understand the evolution of Hindu architecture
CO4: Understand various architectural styles

Books and References

1. Architecture in India by Marilia Albanese, Sandeep Prakashan, Indore, 2001.
2. Hindu India by Henri Stierlin, Taschen, Cologne, 1998.
3. Ancient Indian Architecture by Sanjeev Maheshwari and Rajeev Garg, CBS Publishers & Distributors, Delhi, 2001.
4. The Hindu Temple by R. Champakalakshmi and Usha Kris, Roli Books, Delhi, 2000.
5. The Architecture of India: Buddhist and Hindu by Satish Grover, Vikas Publishing House Pvt. Ltd, India, 1980.
6. Islamic Architecture in India by Satish Grover, Galgotia Publishing Company, Delhi, 1996.

Course Name: **Architectural Drawing and Graphics-I**

Course Code: **AR-114**

Course Type: **Core**

Contact Hours/Week: **2L + 4D** Course Credits: **04**

Course Objective

To familiarize the student with basic knowledge of drafting, lettering techniques and visualization of geometric forms

Unit Number	Course Content	Lectures
UNIT-01	Significance and Scope, Usage of Drawing Instruments, Dimensions, Scales, Free hand Lettering, Line types such as Elevation lines- Construction lines – Section lines – Hidden lines – Centre lines Introduction to pencils with different grades such as F, H, HB, 2B, 4B and 6B. Representation of the different lines created by the different pencils by varying thick-Ness and pressure. Representation of various textures with thick, thin and flat pencils Strokes. Illustrative examples to be followed explaining the various techniques.	**04L**
UNIT-02	Introduction to Orthographic projections, First angle projection Projection of line parallel to both reference planes / parallel to one and inclined to other reference plane / inclined to both the reference planes followed by illustrative examples in each case Projection of plane parallel to VP / parallel to HP / perpendicular to VP and inclined to HP / perpendicular to HP and inclined to VP / inclined to both HP and VP followed by illustrative examples in each case. Introduction to solids bounded by plane surfaces such as prisms / pyramids and solids of revolution such as cylinders / cones, Projection of solids having axis perpendicular to one of the reference planes / axis parallel to either of the reference plane and incline to other reference plane / axis inclined to both the reference planes followed by illustrative examples in each case.	**14L**
UNIT-03	Introduction and Importance, Method of drawing, Sciography of points, lines, planes and solids followed by illustrative example in each case.	**06L**

Course Outcomes

Upon successful completion of the course, the students will be able to

CO1: Use of Drawing Instruments and pencils of various grades

CO2: Learn to draw plan, front elevation and side elevations

CO3: Learn to draw shades and shadows in plan, front elevation and side elevations

Books and References

1. A Textbook of Engineering Drawing by Prof. P.J. Shah, S. Chand Publishing, 2008.
2. Engineering Drawing with an Introduction to AutoCAD by Dhananjay A. Jolhe,Tata McGraw Hill, 2007.
3. Architectural Graphics by Francis D. K. Ching, Wiley; 5th Edition, 2009.
4. Architectural Shades and Shadows by Henry McGoodwin, Nabu Press, 2010.
5. Rendering with Pen and Ink by Robert W. Gill, Thames & Hudson Ltd., 1984.
6. Architectural Drawing by Tom Porter, Hamlyn, 1990.

Course Name: **Disaster Management**
Course Code: **AR-115**
Course Type: **Core**

Contact Hours/Week: **3L + 1T** Course Credits: **04**

Course Objective

To let the students understand the type of natural disasters and its effects on structural and non-structural elements. To understand the mechanism involved in the management of disasters.

Unit Number	Course Content	Lectures
UNIT-01	Ecosystem- natural and man-made ecosystem; Ecological principles; Concepts of Environmental Impact Analysis;	**03L**
UNIT-02	Introduction to Natural Disasters. Introduction to disaster management, Rules and Notification. Natural Disasters: Earthquakes, Floods, River Erosion, Cyclones Tsunami Landslides & Avalanches Forest Fires	**06L**
UNIT-03	Man induced Disasters: Introduction, Nuclear Disaster Chemical, Mine Disaster, Biological Disaster, Cyber Terrorism, and Environmental Disaster.	**06L**
UNIT-04	Planning for Disaster: Guidelines for disaster management of Floods, River Erosion, Cyclones Tsunami Landslides & Avalanches Forest Fires	**12L**
UNIT-05	Fire Service, Forecasting & Early Warning Communications & IT Co-ord. with Scientific Organizations Spatial Data Management, Risk Transfer Microfinance, Role of Corporate Role of NGOs Community Preparedness and Education Gender Issue Vulnerable Groups Urban Development Civil Defense Home Guards NCC,NSS,NYK Medical Preparedness, Public Awareness	**09L**

Course Outcomes

Upon successful completion of the course, the students will be able to

CO1: Understand Natural Disasters and concept of Disaster Management
CO2: Understand the details of Man induced Disasters
CO3: Learn the Planning process for Disaster Mitigation
CO4: Learning the various details of Disaster Management

Books and References

1. Elements of Ecology by Thomas M. Smith and Robert Leo Smith, Pearson, 2014
2. Disaster Management in the Hills by Dr. Satendra, Concept Publishing Company, 2003.
3. Disaster Management by Harsh K. Gupta, Universities Press, 2003.
4. Natural Hazards and Disaster Management: Vulnerability and Mitigation by R. B. Singh, Rawat, 2006.
5. Disaster Risk Reduction in South Asia by Pardeep Sahni, Ariyabandu and Madhavi Malalgoda, PHI Learning, 2003.

Course Name: **Architectural Mathematics**
Course Code: **MA-116**
Course Type: **Core**

Contact Hours/Week: **3L + 1T** Course Credits: **04**

Course Objectives

- To understand matrix algebra and its applicability in different engineering fields.
- To incorporate the knowledge of differential and integral calculus to support their concurrent and subsequent architectural studies.
- To have the idea of Curve Tracing and Three Dimensional Geometry & its physical interpretation and applications.
- To introduce the fundamental concept of Spherical Trigonometry and its interpretation.

Unit Number	Course Content	Lectures
UNIT-01	**Matrix Algebra** Matrices, Related matrices, Complex matrices (Hermitian and skew-Hermitian matrices, Unitary matrix), Rank of a matrix, Gauss-Jordan method, Normal form of a matrix, Linear dependence and independence of vectors, Consistency of linear system of equations, Solution of linear system of equations, Characteristic equation, Eigen values, Eigen vectors, Properties of eigen values, Cayley-Hamilton theorem and its applications, Reduction to diagonal form, Quadratic form and their reduction to canonical form.	**06L**
UNIT-02	**Differential Calculus** Partial Differentiation and its geometrical interpretation, Homogeneous functions, Euler's theorem and its extension, Total differentials, Composite function, Jacobian, Taylor's and Maclaurin's infinite series, Indeterminate forms, Errors and increments, Maxima and minima of functions of two variables, Method of undetermined multipliers. Curve tracing.	**09L**
UNIT-03	**Curve Tracing** Asymptotes, Curves in Cartesian and Polar form, Standard curves- Cartesian & Polar curves, Parametric curves, standard Parametric curves	**04L**
UNIT-04	**Three Dimensional Geometry** Review: Line, plane, sphere, vectors. Tangent plane to sphere, cone, cylinder, Quadric surfaces-(Ellipsoids, Hyperboloid of one and two sheets, cone, elliptic paraboloid, hyperbolic paraboloid, cylinder) , surface of revolution, some standard surfaces of revolution.	**06L**
UNIT-05	**Spherical Trigonometry** Sections of spheres, great circles, spherical triangle and its properties, relations in angles and sides of spherical triangle, spherical right triangle.	**05L**
UNIT-06	**Integral Calculus** Double Integrals (Cartesian and Polar), Change of Order of Integration, Change of Variables, Applications of Double Integrals. Triple integrals, Change of Variables, Applications of Triple Integrals. Beta and Gamma functions.	**06L**

Course Outcomes

Upon successful completion of the course, the student will be able to

CO1: Understand and analyze the theoretical & practical aspects of matrices.
CO2: Identify an appropriate technique to examine linear system of equations, behavior of series, extreme values of functions and interpret the line, surface and volume integrals.
CO3: Learning the limitations, advantages and disadvantages of above mentioned topics. Formulate the problems on related topics and solve analytically.
CO4: To apply the analytical techniques to express data through curves and three dimensional geometry.
CO5: Apply the concepts of integral calculus in various architectural problems.
CO6: Demonstrate the concepts through examples and applications.

Books and References

1. Advanced Engineering Mathematics: by Erwin Kreyszig, John Wiley and Sons, NC, New York.
2. Advanced Engineering Mathematics: by C. R. Wylie & L. C. Barrett, McGraw Hill.
3. Advanced Engineering Mathematics: by R K Jain and SRK Iyenger, Narosa Pub. House.
4. Differential & Integral Calculus: by N. Piskunov, MIR Publications.

Course Name: **Architectural Design-II**
Course Code: **AR-121**
Course Type: **Core**

Contact Hours/Week: **3L + 5D** Course Credits: **06**

Course Objective

To train the students in understanding the interdependence of form, function and structure in the process of Architectural design.

Unit Number	Course Content	Lectures
UNIT-01	Concept of a load bearing structure	**01L**
UNIT-02	Building Type: load bearing structure- Check Post, Post-Office etc. 1. Planning and Design considerations 2. Design Process	**17L**
UNIT-03	Building Type: load bearing structure- Bank, Crèche, Dispensary etc. 1. Planning and Design considerations 2. Design Process	**18L**

Course Outcomes

Upon successful completion of the course, the students will be able to

CO1: Understand the working and design process of a Single storied load bearing structure

Books and References

1. Building drawing with an integrated approach to Built Environment by Shah, Kale and Patki, Tata McGraw-Hill Education, 2002.
2. Site Design Graphics by Micheal S. Kendall, Van Nostrand Reinhold, New York, 1989.
3. Architectural Graphics, by Francis D. K. Ching, John Wiley & Sons, New York, 2015.
4. Time-Saver Standards for Architectural Design: Technical Data for Professional Practice by Michael J. Crosbie and Donald Watson, McGraw-Hill, New York, 2005.
5. Time Saver Standards for Building Types by Joseph De Chiara and Michael J. Crosbie, McGraw-Hill, New York, 2001.
6. Architectural Graphic Standards by Charles George Ramsey, Harold Reeve Sleeper, Bruce Bassler John Wiley & Sons, New York, 2008.

Course Name: **Building Construction and Materials-II**
Course Code: **AR-122**
Course Type: **Core**

Contact Hours/Week: **2L + 4D** Course Credits: **04**

Course Objective

- To familiarize the students with use of timber in building construction.

Unit Number	Course Content	Lectures
UNIT-01	Behavioral characterisitcs and applications of Timber: Variety of Indian timbers, characteristics and suitability for different uses, defects and decay, seasoning and preservation; manufactured timber products and their applications.	**06L**
UNIT-02	Building construction techniques in timber doors and windows. Detailed drawings and construction details of Battened-Ledged-Braced doors, Battened-Braced-Framed doors, Flush doors etc. Introduction to various types of windows in Timber. Detailed drawings and construction details of Casement windows and Bay windows in Timber. Workshop practice for carpentry joints used in 2 and 3.	**08L**
UNIT-03	Building construction techniques in timber floors Introduction to the nature and characteristics of wood floors at ground and first floor level, its advantages & Limitations.	**04L**
UNIT-04	Building construction techniques in timber roofs Introduction to the nature and characteristics of wood construction-roofs, its advantages and Limitations. Detailed drawings and construction details of flat roof batten & tile and various types of sloping roofs in timber such as Lean to roofs, King Post truss and Queen Post truss using AC/CGI, Mangalore tiles & slates roof coverings.	**06L**

Course Outcomes

Upon successful completion of the course, the students will be able to

CO1: Introduction ot Timber as a building material
CO2: Understand the process of timber joinery and learn to draw timber details
CO3: Understand the process of timber floor construction and learn to draw timber floors
CO4: Understand the process of timber roof construction and learn to draw timber roofs

Books and References

1. Building Construction Handbook by Roy Chudley and Roger Greeno, Routledge, New York, 2013
2. The Construction of Buildings, Vol. 1-2 by R Barry, Wiley, 2001.
3. Building Construction Metric Vol. 3 by W.B. Mckay, Orient Longman Private Limited, Mumbai, 2006.
4. Building Construction Illustrated by Francis D.K. Ching, John Wiley & Sons, 2011.
5. Construction Technology Vol. 1-4 by Roy Chudley and Roger Greeno, Prentice Hall (UK), 2005.
6. Workshop Practice 2ndEd. by H.S. Bawa, Tata McGraw-Hill Education, 2009.
7. Carpentry and Joinery by George Mitchell, Cengage Learning EMEA, 1995.
8. Arco's complete woodworking handbook by Jeannette T. Adams, Arco Pub., 1981.

Course Name: **History of Architecture-II**
Course Code: **AR-123**
Course Type: **Core**

Contact Hours/Week: **3L + 1T** Course Credits: **04**

Course Objective

To understand evolution and development of architectural and urban built environment in context to geophysical, social and technological factors

Unit Number	Course Content	Lectures
UNIT-01	Introduction to examples of early shelter, Stone Age as an expression of man's physical and spiritual needs. Introduction to Egyptian civilization. Study of local context and architectural characteristics of public buildings such as mastabas, pyramids and temples to be explained with examples.	**12L**
UNIT-02	Introduction to Mesopotamian civilization. Study of urban context and architecture of Public buildings such as Ziggurat of Ur city and Palace of Khorsabad. Introduction to Greek civilization. Architectural characteristics of typical civic spaces such as Agora, Acropolis, theatres. Systems of proportioning, Greek orders, optical corrections etc. through illustrative examples such as Parthenon etc.	**12L**
UNIT-03	Study of Roman town with respect to location, Architectural characteristics of typical civic spaces such as Forum, theatres etc. Detailed studies of monuments/temples of Roman period with reference to materials, construction systems, Roman orders through illustrative examples.	**12L**

Course Outcomes

Upon successful completion of the course, the students will be able to

CO1: Understand the architectural characteristics of Stone Age and Egyptian civilization
CO2: Understand the architectural characteristics of Mesopotamian and Greek civilization
CO3: Understand the architectural characteristics of Roman civilization

Books and References

1. The World of Architecture by Paul Holberton, Chancellor Press, 1997.
2. A History of Architecture by Sir Banister Fletcher, CBS Publisher, 1999.
3. A History of Architecture by Spiro Kostof, Oxford University Press, 1995.
4. Encyclopedia of World Architecture by Henri Stierlin, Facts on File, 1978
5. A Global History of Architecture, Mark M. Jarzombek, Vikramaditya Prakash and Francis D. K. Ching, John Wiley & Sons, 2011.

Course Name: **Architectural Drawing and Graphics-II**
Course Code: **AR-124**
Course Type: **Core**

Contact Hours/Week: **2L + 4D** Course Credits: **04**

Course Objective

To enable the students to have a better visualization/understanding of a three dimensional entity through Drawings: Sections-Metric views-Sciography and Sketching: Indoor-Outdoor.

Unit Number	Course Content	Lectures
UNIT-01	Introduction and Importance of Sections, Method of drawing Sections in which Section plane parallel to VP and perpendicular to HP / parallel to HP and perpendicular to VP / perpendicular to VP and inclined to HP / perpendicular to HP and inclined to VP / inclined to both HP and VP followed by illustrative examples in each case, True shape of section / Virtual sections / Auxiliary inclined view followed by illustrative examples.	**04L**
UNIT-02	Introduction to Lines of intersection / Curves of intersection, Method of drawing intersection of prisms /pyramids / cylinders followed by illustrative examples, making presentation drawings of these intersecting solids through Sciography.	**04L**
UNIT-03	Introduction and Importance of Surface development, Method of drawing surface development for Tetrahedron / Cube / Octahedron / Dodecahedron / Icosahedrons / Truncated Tetrahedron / Truncated Cube	**06L**
UNIT-04	Introduction and Importance of Metric projections, Method of drawing Isometric projection / Axonometric projection / Elevation oblique projections followed by illustrative examples, Uses of these Metric Projections	**04L**
UNIT-05	Introduction to Object drawing / Indoor sketching and its importance, Method of sketching simple objects / composition of objects freehand in proportion using pencils of different grades / water colors showing light / shade / shadow followed by situational exercises. Introduction to outdoor sketching through basic exercises like sketching of trees and shrubs, sketching of simple buildings with special emphasis on background and foreground and sketching of human figures using pencil of different grades/ water colors showing light / shade / shadow followed by situational exercises.	**06L**

Course Outcomes

Upon successful completion of the course, the students will be able to

CO1: Learn to understand and draw sections of solids
CO2: Learn to understand and draw intersection of solids
CO3: Learn to understand and draw development of surfaces
CO4: Learn to understand and draw metric projections
CO5: Learn to understand and draw free hand sketching

Books and References

1. A Textbook of Engineering Drawing by Prof. P.J. Shah, S. Chand Publishing, 2008.
2. Engineering Drawing by Dhananjay A. Jolhe,Tata McGraw Hill, 2007.
3. Architectural Shades and Shadows by Henry McGoodwin, Nabu Press, 2010.
4. Rendering with Pen and Ink by Robert W. Gill, Thames & Hudson Ltd., 1984.
5. Architectural Drawing by Tom Porter, Hamlyn, 1990.
6. Sketching the Concept by Harold Linton and Scott Sutton, Design Press, 1993.
7. Drawing the Landscape by Chip Sullivan, John Wiley & Sons; 4th Edition, 2014.
8. Time-Saver Standards for Architectural Design: Technical Data for Professional Practice by Michael J. Crosbie and Donald Watson, McGraw-Hill, New York, 2005.

Course Name: **Architectural Workshop**
Course Code: **AR-125**
Course Type: **Core**

Contact Hours/Week: **1L + 3P** Course Credits: **03**

Course Objectives

- To provide skills for carpentry joints
- To provide skills for Model Making
- To enable the students to make brick masonary using various bonds
- To enable the students to make Sculptures

Unit Number	Course Content	Lectures
UNIT-01	Common tools used in carpentary shop	**01L**
UNIT-02	Carpentry machines, common accessores in carpentry	**01L**
UNIT-03	Details of carpentry joints	**01L**
UNIT-04	Materials used in model making	**01L**
UNIT-05	Site relief and modification	**01L**
UNIT-06	Method of finding surfaces and volumes of solids	**01L**
UNIT-07	Brick bonding theory - partition walls	**01L**
UNIT-08	Brick bonding theory - load bearing walls using English bond	**01L**
UNIT-09	Brick bonding theory - load bearing walls using Flemish bond	**01L**
UNIT-10	Building material- Plaster of Paris	**01L**
UNIT-11	Building material – Wiremesh	**01L**
UNIT-12	Building material - Thermocol/clay/any other material	**01L**

Practical No.	Contents of Practical
1.	Preparing a carpentry joint- Tenon & Mortise joint
2.	Preparing a carpentry joint- Dovetail joint
3.	Preparing a carpentry joint- Butt joint
4.	Practice of cutting various board such as sunboard, cardboard, plyboard etc. for use in model making
5.	Preparing a model of contoured site
6.	Surface development for making various solids
7.	Construct a Header (1 brick thick) & Stretcher bond (half brick thick) wall using conventional burnt bricks
8.	Construct a English bond wall of various thickness using conventional burnt bricks
9.	Construct a Flemish bond wall of various thickness using conventional burnt bricks
10.	Sculpture making using Plaster of Paris
11.	Sculpture making using Wiremesh
12.	Sculpture making using Thermocol/ clay/ any other material

Course Outcomes

Upon successful completion of the course, the students will be able to

CO1: Learn to make carpentry joints
CO2: Learn to make architectural models
CO3: Understand use of bricks in various masonary bonds
CO4: Learn to make Sculptures

Books and References

1. Introduction to Basic Manufacturing Processes and Workshop Technology by Rajender Singh, New Age International Pvt. Limited, Publishers, 2006.
2. Barry's Introduction to Construction of Buildings by Stephen Emmitt and Christopher A. Gorse, Wiley-Blackwell, 2010.
3. Time-Saver Standards for Architectural Design: Technical Data for Professional Practice by Michael J. Crosbie and Donald Watson, McGraw-Hill, New York, 2005.
4. Building Materials by S.K.Duggal, New Age International Pvt. Limited, Publishers, 2012.

Course Name: **Communication Skills**
Course Code: **HS-126**
Course Type: **Core**

Contact Hours/Week: **2L + 1T + 2P** Course Credits: **04**

Course Objectives

- To develop independent perspective through critical thinking
- To communicate their perspective in clear and correctly articulated language through LSRW skills
- To instill a lifelong habit of language learning

Unit Number	Course Content	Lectures
UNIT-01	**Introduction:** Role of Effective Communication Skills for an Engineer, Theories of acquiring and learning English as a Second language, Challenges in learning language and means to overcome these.	**02L**
UNIT-02	**Communication process**: Types and modes of communication, Formal and Informal Communication, Process, Channels and levels of communication in Organizations , Intrapersonal and interpersonal communication, Common frame of reference and Context for effective communication, Verbal and Non verbal communication, Interpreting non-verbal communication, Barriers to effective communication	**06L**
UNIT-03	**Effective Listening Skills:** What does listening mean? Types of listening, Strategies for effective listening, Listening for specific purposes, Listening process and barriers to listening, Leadership and role of effective listening, Problems in comprehension and retention, note taking, Exposure to recorded audio/visual text for listening	**02L**
UNIT-04	**Effective Speaking Skills** **Interviews and Group discussion:** Telephonic and personal interviews, Pre-Interview planning SWOT analysis, Building self-confidence, Developing Emotional intelligence, Preparing for current topics, Group Discussion as an interviewing tool **Public speaking**: Become aware of personal speech habits and characteristics. Improving non-verbal cues, voice, diction and other mechanics of speech. Speech preparation and presentation techniques, Audience awareness and self-awareness, Cultivating poise and self-confidence. Presenting a variety of speeches (informative, persuasive, demonstrative, special occasion, etc.)	**06L**
UNIT-05	**Reading Skills:** Need and process, Approach to different reading materials, Purposes of reading, Different reading strategies: Skimming, Scanning Predicting, Inferring from the context Reading, Comprehension, Vocabulary expansion through reading	**02L**
UNIT-06	**Writing Skills:** Need and strategy, Developing Style of Writing, Role of appropriateness, brevity and clarity in writing, Cohesion and Coherence, Paragraph writing, Vocabulary building (roots, prefixes, suffixes) SOP, Resume/CV, Job applications **Report writing**: Importance of Technical Report Writing, Types of Reports, Objectivity in Report Writing, Collection of Data for Report writing	**06L**

Practical No.	Contents of Practical (activities based on language software Sky Pronunciation/others)
1.	Sky Pronunciation: Introduction to the Speech Sounds of English
2.	Sky Pronunciation: Syllable and Organs of Speech
3.	Sky Pronunciation: Vowel and Consonant Sounds
4.	Sky Pronunciation: Similar sounds and test
5.	Word Stress and Intonation using available software
6.	Listening and Comprehension using available software
7.	Listening to Native speakers of English language
8.	Watching short talks for learning effective presentation skills
9.	Presentation skills using technology enabled slides
10.	Just a Minute (JAM) Sessions
11.	Describing Objects/Situations/People
12.	Interview skills using available software/interview videos

Course Outcomes

Upon successful completion of the course, the students will be able to

CO1: Identify the importance of Communication Skills

CO2: Apply Critical Thinking to what they read, listen to and observe

CO3: Apply principles of effective LSRW Skills in professional and Social Communication

CO4: Assess the verbal and non-verbal messages effectively

Books and References

1. Business Communication Today by Bovee, Courtland, L., John V. Thill and Barbara E. Schatzman: Pearson Education: Delhi.
2. The Definitive Book of Body Language by Allan Pease and Barbara Pease. Manjul Publishing House: New Delhi.
3. Communication for Business by Shirley Taylor. Longman: New Delhi.
4. Technical Communication: Principles and Practice by Meenakshi Raman and Sangeeta Sharma. Oxford University Press: New Delhi.

Evaluation System for Theory and Laboratory/Practical Courses

B.Tech./B.Arch./Dual Degree Programmes

A. Theory Courses [Having Lecture (L)/Tutorial (T) Contact Hours]

SN	Component	Weightage
1.	Continuous Assessment (Based on performance in assignments/quizzes/ tests/tutorials, etc.)	20%
2.	Mid Semester Examination	30% (1½ Hours)
3.	End Semester Examination	50% (03 Hours)

B. Practical Courses [Having Practical (P)/Drawing (D) Contact Hours]

SN	Component	Weightage
1.	Continuous Assessment (Based on quantity and quality of experiments/jobs, skills in handling equipment, performance in viva/tests, accuracy of outcomes/features, etc.)	60%
2.	End Semester Evaluation (Performance in practical/job/test/quiz/viva, etc.)	40%

C. Theory and Practical Courses (Engineering Workshop/Architectural Workshop/ Engineering Graphics)

SN	Component	Weightage
Continuous Evaluation		
1.	Continuous Assessment (Based on quantity and quality of experiments/jobs/drawings, skills in handling equipment, performance in viva/tests, accuracy of outcomes/features, etc.)	60%
End Semester Evaluation		
2.	Minor Practice Test (Written)	20% (01 Hour)
3.	End Semester Evaluation (Based on quality of job/drawing/project)	20% (03 Hours)

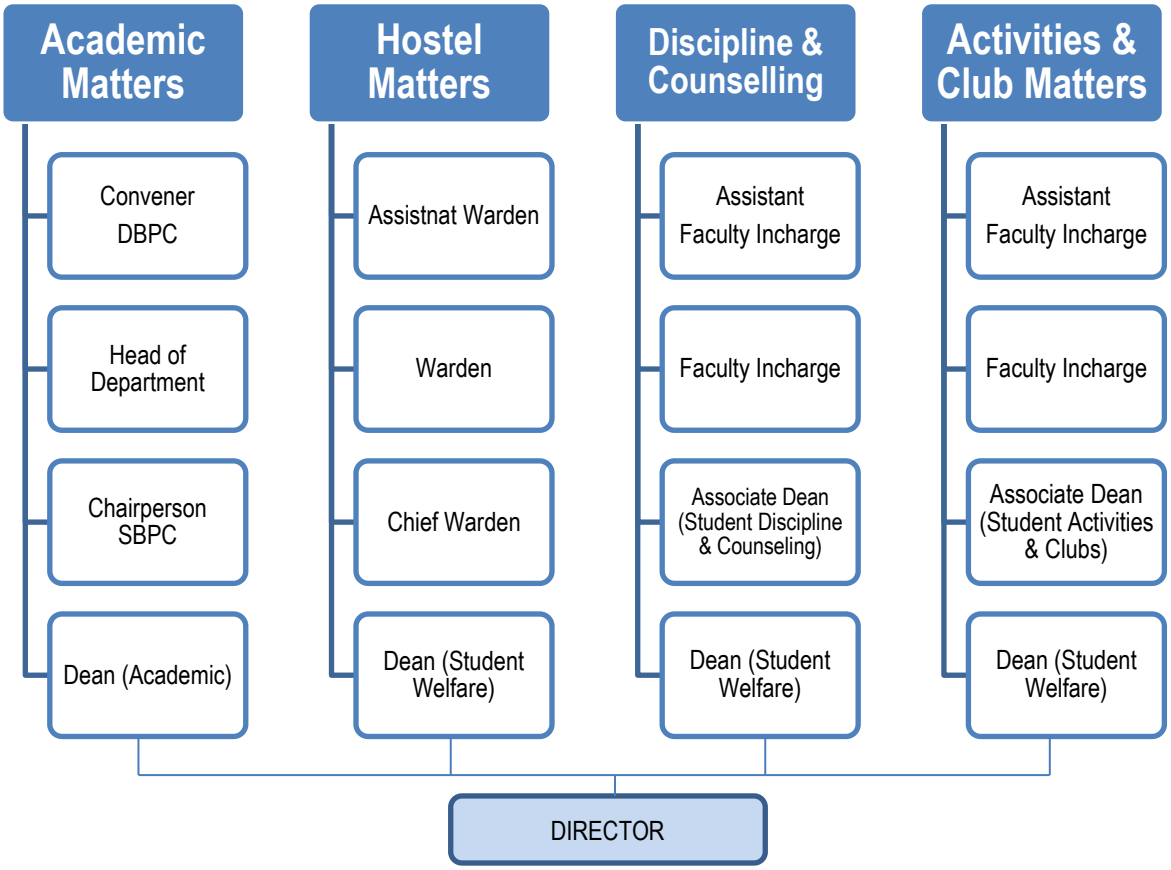
D. Theory and Practical Courses [Having Lecture (L)/Tutorial (T) and Practical (P)/Drawing (D) Contact Hours]

SN	Theory Component (Overall Weightage: 80%)		Practical Component (Overall Weightage: 20%)	
1.	Continuous Assessment (Based on performance in assignments/quizzes/ tests/tutorials, etc.)	20%	Continuous Assessment (Based on quantity and quality of experiments/jobs, skills in handling equipment, performance in viva/tests, accuracy of outcomes/features, etc.)	60%
2.	Mid Semester Examination	30% (1½ Hours)	End Semester Evaluation (Performance in practical/job/test/quiz/viva, etc.)	40%
3.	End Semester Examination	50% (03 Hours)		

E. Studio Courses [Having Lecture (L) and Drawing (D) Contact Hours in B.Arch. Courses]

SN	Component	Weightage
1.	Continuous Assessment (Based on quantity and quality of experiments/jobs, skills in handling equipment, performance in viva/tests, accuracy of outcomes/features/design problems, etc.)	80%
2.	End Semester Evaluation (Performance in practical/job/test/quiz/viva, etc.)	20%

Student Related Authorities for Various Matters



Institute Central Facilities

Computer Center	Computer Centre is a central facility related to computing, communication and networking services
Central Workshop	As part of Department of Mechanical Engineering, the Central Workshop imparts practical training to students of all departments in the shop floor
Health Center	Provides treatment for different diseases and also provide first aid to the injured. Institute ambulance is available for serious cases
Central Library	Home of almost 90000+ books and journals and can accommodate more than 500 students
Auditorium	Used to organize various Institute events
Open Air Theater	Used to organize students functions
SBI Branch	Ground Floor, Estate Office Building
Post Office	First Floor, Estate Office Building (Above SBI Bank)
Eateries	Amul, Verka, Juice Bar, HPMC and 4H
Book Shops	One near Estate Office and one at Main Gate
Other Shops	Photostat and Printing Shop (Near Estate Office), Two Confectionaries Shops (one near Estate Office and one at Main Gate), One Vegetable and Fruits Shop (Main Gate), One Daily Need Shop (Main Gate), Patanjali Store (Gate II)
Laundry Shops	One near SBI Bank and one near Gate II


प्रशासनिक भवन
ADMINISTRATIVE BLOCK