NATIONAL INSTITUTE OF TECHNOLOGY RAIPUR

PROPOSED NEW SCHEME OF EXAMINATION FOR

TEN SEMESTER INTEGRATED COURSE OF B.ARCH.(APPLICABLE FROM 2010-11)

FIRST SEMESTER

S.No.	Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
			L	**T**	**P**	**ESE**	**FE/ SE**	**TA**		
1	1111	Architectural Design I (Basic Design & Visual Arts)	2	0	0	0	50	100	150	2
2	1112	Building Construction and Technology I	2	0	0	70	30	75	175	2
3	1113	Structural Design and Systems I	3	2	0	70	30	20	120	4
4	1114	Architectural Graphics Skills-I	3	0	0	70	30	75	175	3
5	1115	Building Materials and Science I	2	1	0	70	30	20	120	3
6	1116	Communication Skills (Humanities)	2	1	0	70	30	20	120	3
7	1121	Architectural Design I (Basic Design & Visual Arts) Studio	0	0	6	50	0	0	50	3
8	1122	Building Construction Technology I Studio	0	0	3	25	0	0	25	2
9	1124	Architectural Graphics Skills I- Studio	0	0	3	25	0	0	25	2
10	1127	Workshop practice and Site exposure I	0	0	3	0	0	40	40	2
TOTAL			**14**	**4**	**15**	**450**	**200**	**350**	**1000**	**26**

NATIONAL INSTITUTE OF TECHNOLOGY RAIPUR.

SYLLABUS FOR FIVE YEARS B.ARCH. DEGREE COURSE
(A Ten semester integrated course)

FIRST SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1111	**Architectural Design I (Basic Design and Visual Arts)**	2	0	0	0	50	100	150	2

The aim of the subject is to introduce to the students the design fundamentals and design vocabulary and enable them to apply the same in compositions and designs.

- Points, Lines, Planes, Color theory and compositions. Introduction to modern Arts and various other techniques.
- Forms, Properties of forms, variations in forms with inter-relationship among planes, colours, tones, textures. Application of them in two and three-dimensional compositions, presented in form of scaled drawings, views, and freehand sketches to develop the skill and understanding of forms, proportions etc. in various media viz. pencil, pens, colors etc.
- Study through models of different materials viz. paper, clay, wax, soap, wires etc. The idea is mass and space handling with understanding the roles of form, colour and texture.
- Anthropometric study and ergonomics of human figure, dimensions of furniture and relationship with human anthropometrics (like in kitchens, toilets, bedrooms, staircases etc) with freehand drawing of human figures, vehicles, trees, buildings etc. to have a better understanding of proportion.
- Designing of basic building components (like kitchens, bedrooms, toilets etc.)

Note:

Sessionals shall be in the form of drawings and models along with report.

Two time problems (as class tests) are to be conducted in class other than regular design problems.

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FIRST SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1112	**Building Construction and Technology-I**	2	0	0	70	30	75	175	2

UNIT 1	**Brick:** • Types of bricks. • Bonds in brick masonry for various thicknesses of walls and various situations like ends, junctions, etc. • Attached and detached pier. • Jointing and pointing. • Cavity walls.
UNIT 2	**Stone:** • Stone dressing of different types. • Stone masonry of different types for various thicknesses of walls. • Jointing and pointing.
UNIT 3	**Foundation:** • Types of simple foundations. • In Bricks • In Stones, • Timbering to excavation.
UNIT 4	**Arches and Lintels**: • Brick Arches. • Stones Arches. • Brick Lintels. • Stone lintels, • Centering materials and methods.
UNIT 5	**Construction systems and Elements of Buildings** • Overview of method of construction of a simple two storied building. • Plinth - filling – processes and techniques. • Thresholds – various types • Plinth protection, D.P.C. • Coping • Chhajja

Note:

1. Sessionals shall be in form of drawing sheets having scaled drawings and proportionate freehand sketches, along with occasional visits to construction sites.
2. In theory examination there will be a separate question from each unit with choice within the unit/question. All units/questions will be compulsory.

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FIRST SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1113	**Structural Design and Systems - I**	3	2	0	70	30	20	120	4

APPLIED MECHANICS

UNIT 1	• Concurrent, non-concurrent and co-planer forces, • Composition and resolution of forces, • Laws of forces, • Moments and couples, • Conditions of equilibrium.
UNIT 2	• Center of gravity and moment of inertia of composite and cutout section, • Parallel and perpendicular axes theorem.
UNIT 3	• Types of loads, • Support and support reaction, • Stresses in frames and trusses by analytical and graphical method. • Maxwell's diagram.
UNIT 4	• Stress and strain, • Hook's law, • Lateral strain, • Poisson Ratio, • Young's Modulus, • Modulus of Rigidity, • Bulk Modulus and their relation.
UNIT 5	• Stresses in composite sections. • Thermal stress.

Note:

1. Sessionals work shall include assignments/tests on the above topics.
2. In theory examination there will be a separate question from each unit with choice within the unit/question. All units/questions will be compulsory.

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FIRST SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1114	**Architectural Graphics Skills-I**	3	0	0	70	30	75	175	3

UNIT 1	**Graphical Codes, Symbols and Scales** • Architectural letterings • Types of lines • Symbolic representations of building materials • Symbolic Representations of Building parts. • Plane Scales • Diagonal Scales
UNIT 2	**Geometric views and Projections** • Isometric views • Axonometric views • Oblique views • Isometric projections • Axonometric Projections • Oblique Projections
UNIT 3	**Orthographic projections (One and two Dimensions)** • Points • Lines • Lamina (Parallel, Perpendicular and inclined projections of above)
UNIT 4	**Orthographic projections (Three Dimensions)** • Various solid and hollow geometrical objects — Parallel, Perpendicular and inclined projections.
UNIT 5	**Sections, Interpenetrations and Development of Surfaces** • Sections of various solid and hollow geometrical objects — Parallel, Perpendicular and inclined. • Interpenetration of various solid geometrical object • Development of surfaces with or without sections.

Note:

1. Sessionals is to be done in the form of drawings on drawing sheets and proportionate sketches on above topics.
2. In theory examination there will be a separate question from each unit with choice within the unit/question. All units/questions will be compulsory.

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FIRST SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1115	**Building Materials and Science - I**	2	1	0	70	30	20	120	3

The subject aims at developing the understanding and knowledge of BASIC building materials regarding their availability, constitution, properties, classification, uses and applications, effects of sun, rain, wind and other climatic and environmental conditions on them.

UNIT 1	**Clay and clay products and stones.** • Bricks —Various types of bricks, properties of good brick, use of bricks, classification of various grades of bricks. • Compressed mud blocks, hollow blocks • Stones — Buildings stones, types, properties of good stone, natural bed, aggregates for concrete work, use of stones.
UNIT 2	**Cementing materials:** Cement**,** lime, sand, aggregate, mortar and concrete. • Lime—quick lime, hydraulic lime, lime mortar mix and preparation, neeroo, efflorescence, peeling and flaking. • Cement — Composition, properties of cement, initial setting time, slow setting, quick setting and rapid hardening cement. • Sand— Pit, river and sea sand, uses in mortar and concrete, properties of good sand, impurities of sand and their removal. • Mortar — Various types of mortar, their mix and properties, application methods. • Concrete — Various types of concrete, their mix and properties, application methods.
UNIT 3	**Timber and bamboo**: • Timber of various types of quality and properties, • Defects in timbers • Methods of seasoning, sawing and planning, • Preservation of timber • Bamboo as a building material • Preservation of bamboo • Use of timber and bamboo in buildings.
UNIT 4	**Metals:** • Various types of Ferrous Metals- Wrought Iron, Cast Iron, Steel, their properties and uses in Architecture. • Various types of Non-Ferrous Metals- Aluminium, Copper, Tin, Brass, etc. their properties and uses in Architecture.
UNIT 5	**Glass:** • Various types of glasses and their properties. • Use of glass in architecture, • Working on glass such as etching, beveling, and stained glass work.

Note:

1. Sessionals shall be in the form of small reports, seminars and notes on above mentioned topics. The works of CBRI, CFRI, BMTPC, HUDCO, TIFAC, and other institutions to be referred and discussed.
2. In theory examination there will be a separate question from each unit with choice within the unit/question. All units/questions will be compulsory.

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FIRST SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1116	**Communication Skills (Humanities)**	2	1	0	70	30	20	120	3

UNIT 1	**Aids to Correct Writing** • Tenses • Models • Conditionals • Infinitives, gerunds and participles • Active and passive voice narration • Subject verb agreement • Common errors • Punctuations, capital letters.
UNIT 2	**Composition-I** • Précis • Essay • Paragraph • Copy Writing for advertisements — characteristics of a good advertisement, aids to make advertisement attractive and effective.
UNIT 3	**Composition-II** • Technical reports and letter writing • Speeches, profile of speaker, characteristics of speech. • Aesthetic and critical writing, kinesics. • Appreciation of scene, figures and images.
UNIT 4	**Enriching vocabulary:** • Nuances, jargon, foreign word and phrases sometimes used in correspondence. • Roots and origin of words • Words often confused • Synonims • Antonyms • Homophone • Homonym • Words followed by preposition • Prefixes and suffixes • Words followed by appropriate prepositions • Idioms • Phrases
UNIT 5	**Presentation Skills:** Communication skills in architecture through write up and graphic, graphs, sketches audio presentation, supplemented by drawings, transparencies, photographs, epidiascope, slides, video presentation, script writing dubbing, cue sheet, ending vision, mixing.

Note:

1. Sessional work shall include assignments/tests on the above topics.
2. In theory examination there will be a separate question from each unit with choice within the unit/question. All units/questions will be compulsory.

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FIRST SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1121	**Architectural Design I (Basic Design and Visual Arts) Studio**	0	0	6	50	0	0	50	3

The subject is a lab (studio) oriented subject and hence, the syllabus as specified in Architectural Design I (Basic Design and Visual Arts) **(**1111**)** will be the same. The works done as sessionals will be evaluated by internal and external examiners at the end semester examination. For conduction of the practical (viva-voce) examination one external and one internal examiner may be appointed for a group of 15-20 students.

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FIRST SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1122	**Building Construction and Technology-I Studio**	0	0	3	25	0	0	25	2

The subject is a lab (studio) oriented subject and hence, the syllabus as specified in Building Construction and Technology-I **(**1112**)** will be the same. The works done as sessionals will be evaluated by internal and external examiners at the end semester examination. For conduction of the practical (viva-voce) examination one external and one internal examiner may be appointed for a group of 15-20 students.

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FIRST SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1124	**Architectural Graphics Skills-I Studio**	0	0	3	25	0	0	25	2

The subject is a lab (studio) oriented subject and hence, the syllabus as specified in Architectural Graphics Skills-I (1114) will be the same. The works done as sessionals will be evaluated by internal and external examiners at the end semester examination. For conduction of the practical (viva-voce) examination one external and one internal examiner may be appointed for a group of 15-20 students.

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FIRST SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1127	**Workshop Practice and Site Exposure-I**	0	0	3	0	0	40	40	2

The aim of the subject is to introduce to the students to the various tools used in carpentry, metal work, masonry, painting etc. and get a reasonable skill in handling the materials and tools there off.

Plastic materials: Use of clay, plaster of Paris, wax, soap etc.

Paper Craft: Introduction to modeling with paper, board, plastic sheets etc.

Carpentry: Handling different carpentry tools, carpentry processes, carpentry joints and wood working machines.

Masonry: Handling the bricks, mixing the mortar, bond work of bricks, stones and masonry tools.

Note:

1. Site visits relating to the various works may be carried out for better exposure to the students.
2. Submission of the sessionals will be in the form of different jobs /projects in each trade and models prepared by students and the same will be subjected to internal examination.

NATIONAL INSTITUTE OF TECHNOLOGY RAIPUR

PROPOSED NEW SCHEME OF EXAMINATION FOR

TEN SEMESTER INTEGRATED COURSE OF B. ARCH.(APPLICABLE FROM 2010-11)

SECOND SEMESTER

S.No.	Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
			L	**T**	**P**	**ESE**	**FE/ SE**	**TA**		
1	1211	Architectural Design II (Basic Design & Visual Arts)	2	0	0	0	50	100	150	2
2	1212	Building Construction and Technology II	2	0	0	70	30	75	175	2
3	1213	Structural Design and Systems II	3	2	0	70	30	20	120	4
4	1214	Architectural Graphics Skills-II	3	0	0	70	30	75	175	3
5	1215	Building Materials and Science II	2	1	0	70	30	20	120	3
6	1216	Environmental Studies	2	2	0	70	30	20	120	3
7	1221	Architectural Design II (Basic Design & Visual Arts) Studio	0	0	6	50	0	0	50	3
8	1222	Building Construction and Technology II Studio	0	0	3	25	0	0	25	2
9	1224	Architectural Graphics Skills II- Studio	0	0	3	25	0	0	25	2
10	1227	Workshop practice and Site exposure II	0	0	2	0	0	20	20	1
11	1228	Discipline						20	20	1
TOTAL			**14**	**5**	**14**	**450**	**200**	**350**	**1000**	**26**

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SYLLABUS FOR FIVE YEARS B.ARCH. DEGREE COURSE
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SECOND SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1211	**Architectural Design II (Basic Design and Visual Arts)**	2	0	0	0	50	100	150	2

- Principles of Aesthetics and introduction to aesthetical terms like form, balance, rhythm, harmony, texture, color, symmetry, contrast, discord, accentuation, monotony etc.
- Introduction of Architectural design with an approach of functional understanding and analysis of problems with studies of space requirement for different furniture (objects), activities and circulation, Relationship between occupied and unoccupied spaces.
- Design of small shelters and study of multi units involving 3 to 4 functional spaces, Natural and manmade objects of functional and aesthetic value. Aspects of area determination in conjunction with relevant building Bye Laws and area relationship.
- Case studies for measured drawing of small buildings and furniture. Introduction of presentation drawings. Small views (isometric and perspective) of the studied building.
- Study and design of small structures like ceremonial gates, temporary exhibition stalls, kiosks, bus stop, small pavilions etc.

Two time problems (as class tests) are to be conducted in class other than regular design problems.

Note:

1. Sessionals will be in the form of drawings and models along with technical report for the design dealt with. The evaluation should be done in intermediate reviews consisting of internal/external experts.
2. There should be regular site visits to the building types dealt in the studio problem for which audiovisuals should be prepared.

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SECOND SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1212	**Building Construction and technology II**	2	0	0	70	30	75	175	2

UNIT 1	**Doors (timber):** • Ledged braced and battened door • Panel door • Glazed door • Flush door
UNIT 2	**Windows (timber):** • Side and Top hung • Pivoted • Louvers • Ventilators • Fixed and openable fanlights. • Composite window.
UNIT 3	**Door (metal):** • Pressed steel • 'Z' section, with and without fanlight. • Swing doors.
UNIT 4	**Windows (metal):** • Pressed steel • 'z' section, • Top and side hung, fixed • Pivoted • Louvers • Ventilators • Fanlights • Composite window.
UNIT 5	**Opening accessories:** • Jamb casing • Architrave • Palmate • Moldings • Skirting • Door and window fixtures. • Door cum window in timber and metal.

Note:

1. Sessional shall be done as scaled drawings on drawing sheets and freehand drawings along with occasional visits to construction sites.
2. In theory examination there will be a separate question from each unit with choice within the unit/question. All units/questions will be compulsory.

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SECOND SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1213	**Structural Design and Systems II**	3	2	0	70	30	20	120	4

STRUCTURAL MECHANICS

UNIT 1	• Strain energy, • Bette's law, • First theorem of Castigliano. • Deflection of truss joint
UNIT 2	• Shear force and bending moment diagram for simply supported beam, cantilever beam, overhang beam (subjected to point load, U.D.L and point load/U.D.L.) • Point of contra flexure, • Member subjected to couple.
UNIT 3	• Theory of bending (simple and pure) • Bending equation, • Section modulus (only for Rectangular, hollow rectangular) • Shear stress distribution for rectangular beam section • Introduction of flitched beam.
UNIT 4	**Fixed beam:** • Bending moment diagram for a fixed beam. (Fixed beam subjected to Point load, U.D.L and couple) • Advantages and disadvantages of fixed beam. • Clapeyron's Theorem, • Continuous beam with fixed end.
UNIT 5	• Principal stresses and strain, • Mohr's circle.

Note:

1. Sessionals work shall include assignments/tests on the above topics.
2. In theory examination there will be a separate question from each unit with choice within the unit/question. All units/questions will be compulsory.

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SECOND SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1214	**Architectural Graphics Skills- II**	3	0	0	70	30	75	175	3

UNIT 1	**Perspective Drawings -I** • Introduction to basic terms, principles, types and techniques of perspective drawings for expression of ideas. • Two point perspective of simple geometrical objects • One point perspective of simple geometrical objects
UNIT 2	**Perspective Drawings –II** • Two point perspective of complex geometrical objects and buildings • One point perspective of complex geometrical objects and building interiors/ exteriors. • Freehand perspective drawings with various techniques of buildings.
UNIT 3	**Sciagraphy-I** • Introduction to basic principles of Sciagraphy and its application on two dimensional objects in plans and elevations.
UNIT 4	**Sciagraphy-II** • Sciagraphy of three dimensional objects in plan, elevations and views (isometric, axonometric and perspective). • Sciagraphy of simple building elements.
UNIT 5	**Practical applications:** • Development of perspective projections of buildings with sciagraphy and rendering techniques, multiple point perspectives.

Note:

1. Sessionals are to be done in the form of drawings on drawing sheets and proportionate sketches on above topics. Sessional will be evaluated continuously in class.
2. In theory examination there will be a separate question from Unit 1 to Unit 4 with choice within the unit/question.

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SECOND SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1215	**Building Materials and Science - II**	2	1	0	70	30	20	120	3

The subject aims at developing the understanding and knowledge of various building materials regarding their availability, constitution, properties, classification, uses and applications.

UNIT 1	**Flooring, and wall cladding:** along with fixing materials • Stones. • Stone slabs. • Stone tiles. • Bricks. • Clay tiles. • Mosaic tiles. • Terrazzo.
UNIT 2	**Roof coverings:** along with materials, fittings and fixtures used in the construction. • Country tiles. • Mangalore and other designed tiles. • Metal sheets, GI sheets/ steel corrugated sheets. • Structural glass. • Modern roof covering materials like acrylic sheets, fiber glass sheets, polycarbonate sheets, slate, shingles, etc.
UNIT 3	**Wall paneling and ceiling:** • Timber panels. • Timber boards. • Fiber boards. • Particle boards. • Ply boards. • Laminated boards. • Gypsum boards. • Glass wool boards. • Modern wall paneling materials like Aluminum Composite Panel, glass paneling, glass blocks, PVC sheets, etc.
UNIT 4	**Precast unit:** • Solid and hollow concrete block. • Waffle unit. • Core unit. • Other pre-engineered units (as per CBRI), Ferro-cement, etc.
UNIT 5	**Surface finishes:** a) Preparation, application and defect correction on plastered internal and external surfaces. • Lime wash, Colour clay wash, Distempers, Cement based color, Plaster of Paris, Putties along with the adhesives, thinners, solvents. b) Preparation, application and defect correction on timber and metallic surface. • Primers, paints, varnishes, Polishes along with adhesives, thinners, solvents.

Note:

1. Sessional shall be in the form of self-study, market survey, sample and literature collection, reports and seminars/presentation.
2. The works of CBRI, BMTPC, SERC, HUDCO and other institutions be referred and discussed.
3. In theory examination there will be a separate question from each unit with choice within the unit/question. All units/questions will be compulsory.

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SECOND SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1216	**Environmental Studies**	2	2	0	70	30	20	120	3

The aim of the subject is to acquaint the students about the environment and its effect on human beings in general. The subject is introduced to create awareness among students regarding development in harmony with ecosystem.

UNIT 1	**Ecosystems:** • Concept of eco-system, • Fundamental of eco-logy and ecosystem, • Components of ecosystem, • Food chain, food web, trophic levels, energy flow, cycling of nutrients, • Major ecosystem types (forest, grassland, and aquatic eco-system).
UNIT 2	**Air pollution:** • Atmospheric composition • Classification of air pollutants, • Source and effect of pollutants —green house effect, global warming, ozone depletion, atmospheric stability and temperature inversion etc. • Ambient air quality standards. • Architectural measures for reducing air pollution.
UNIT 3	**Water pollution:** • Hydrosphere, Natural water • Classification of water pollutants, trace elements, contamination of water, • Sources and effects of water pollution, types of pollutants • Determination and significance of DO, BOD and COD in waste water. • Eutrophication, methods and equipments used in waste water treatment (Preliminary, secondary and tertiary) • Architectural measures for reducing water pollution.
UNIT 4	**Land and noise pollution:** • Lithosphere, • Pollutants (agricultural, industrial, urban waste, hazardous waste)— their origin and effect. • Collection of solid waste, solid waste management, recycling and reduction of solid waste and their disposal techniques (open dumping, sanitary land filling, thermal, composting). • Noise pollution — definitions and causes. • Sources, effects, standards and control measures. • Architectural measures for reducing land and noise pollution.
UNIT 5	**Ecofriendly Architecture:** • Urban ecosyatem and rural ecosystems • Inter-relationship of manmade development with eco-processes. • Ecofriendly materials, • Ecofriendly energy systems. • Works of various architects who have worked in the field of eco-friendly architecture.

Note:

Sessionals will be in the form of drawings and models along with technical report for the subject dealt with. The evaluation should be done in intermediate reviews. There could be regular site visits to understand the ecosystems and eco-friendly architecture.

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SECOND SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1221	**Architectural Design II (Basic Design and Visual Arts) Studio**	0	0	6	50	0	0	50	3

The subject is a lab (studio) oriented subject and hence, the syllabus as specified in Architectural Design II (Basic Design and Visual Arts) **(**1211**)** will be the same. The works done as sessionals will be evaluated by internal and external examiners at the end semester examination. For conduction of the practical (viva-voce) examination one external and one internal examiner may be appointed for a group of 15-20 students.

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SECOND SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1222	**Building Construction and Technology-II Studio**	0	0	3	25	0	0	25	2

The subject is a lab (studio) oriented subject and hence, the syllabus as specified in Building Construction and Technology-II **(**1212**)** will be the same. The works done as sessionals will be evaluated by internal and external examiners at the end semester examination. For conduction of the practical (viva-voce) examination one external and one internal examiner may be appointed for a group of 15-20 students.

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SYLLABUS FOR FIVE YEARS B.ARCH. DEGREE COURSE
(A Ten semester integrated course)

SECOND SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1224	**Architectural Graphics Skills-II Studio**	0	0	3	25	0	0	25	2

The subject is a lab (studio) oriented subject and hence, the syllabus as specified in Architectural Graphics Skills-II (1214) will be the same. The works done as sessionals will be evaluated by internal and external examiners at the end semester examination. For conduction of the practical (viva-voce) examination one external and one internal examiner may be appointed for a group of 15-20 students.

NATIONAL INSTITUTE OF TECHNOLOGY, RAIPUR.

SYLLABUS FOR FIVE YEARS B.ARCH. DEGREE COURSE
(A Ten semester integrated course)

SECOND SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1227	**Workshop Practice and Site Exposure-II**	0	0	2	0	0	20	20	1

The aim of the subject is to introduce to the students to the various tools used in painting and polishing, plumbing, metal work, electrical wiring etc. and get a reasonable skill in handling the materials and tools there off. The workshop should be directed to impart first hand experiences to students in construction of buildings like – preparing layouts for sites, marking for foundations, use of pipe level, spirit levels, plumb-bob, etc. Firsthand experience of plastering, casting concrete, etc.
Sessionals given in building construction also could be given as model making.
Model making of design problems introduced into the class.

Painting and polishing: Preparation of timber and metal surfaces, priming, painting by brush, spray, guns, polishing of timber surfaces, lamination to timber surfaces.
Plumbing: Introduction to various pipes and fittings, screwed joints, threads, bending and plumbers tools. Fixing of fixtures like traps, taps, wash basins, urinals, W.C., showers etc.
Metal work: Cutting, bending and jointing of (ferrous/non ferrous metals) sheets, flats, bars, wires etc.
Electrical Wiring: Basic electrical wiring systems like fitting of lights, geysers, one-way and two-way switches, regulators. MCB and electrical distribution system, earthing. Use of ammeters and voltameters.
Model making of design studio. Making of models with detailing.

Note:

1. Site visits relating to the various works may be carried out for better exposure to the students.
2. Sessionals will be in the form of different jobs /projects in each trade and models prepared by students and the same will be subjected to internal examination.

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SECOND SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1228	**Discipline**	–	–	–	–	–	20	20	1

The marks of this subject are based on the yearly performance, behavior, conduct, active participation, discipline and attendance of the students.

NATIONAL INSTITUTE OF TECHNOLOGY RAIPUR

PROPOSED NEW SCHEME OF EXAMINATION FOR

TEN SEMESTER INTEGRATED COURSE OF B. ARCH.(APPLICABLE FROM 2010-11)

THIRD SEMESTER

S.No.	Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
			L	**T**	**P**	**ESE**	**FE/ SE**	**TA**		
1	1311	Architectural Design III	2	0	0	0	50	100	150	2
2	1312	Building Construction and Technology III	2	0	0	70	30	75	175	2
3	1313	Structural Design and Systems III	3	2	0	70	30	20	120	4
4	1314	Climatology	3	1	0	70	30	30	130	4
5	1315	Building Materials and Science III	2	0	0	70	30	20	120	2
6	1316	History of Architecture, Art and Culture I	3	1	0	70	30	50	150	4
7	1321	Architectural Design III Studio	0	0	6	50	0	0	50	3
8	1322	Building Construction Technology III Studio	0	0	3	25	0	0	25	2
9	1327	Disaster Management	0	0	2	0	0	25	25	1
10	1328	Computer Applications in Architecture	0	0	3	25	0	30	55	2
TOTAL			**15**	**4**	**14**	**450**	**200**	**350**	**1000**	**26**

NATIONAL INSTITUTE OF TECHNOLOGY, RAIPUR.

SYLLABUS FOR FIVE YEARS B.ARCH. DEGREE COURSE
(A Ten semester integrated course)

THIRD SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1311	**Architectural Design-III**	2	0	0	0	50	100	150	2

The aim of the course is to emphasis and evolves the methodology for architectural design with reference to the previous knowledge of function and aesthetics. The design should highlight clear approach to the design with concept, Analysis, Synthesis and clarity of details (like barrier free design considerations), along with architectural expression with use of appropriate graphic presentation techniques.

1. The design should be done with **sensitivity towards surroundings** i.e. traditional and vernacular architecture, construction techniques and environment.

2. The assignments shall be design of small buildings like nursery schools, restaurants, small nursing homes, small offices, exhibition pavilions, dispensaries, residences, canteens, shops etc.

Two time problems (as class tests) are to be conducted in class other than regular design problems.

Notes:

Sessional will be in the form of drawings and models along with project report for the design dealt. The evaluation shall be done in intermediate reviews consisting of internal and external experts. There should be regular site visits / case studies of buildings, so as to document them with the help of photographs, slides, etc.

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SYLLABUS FOR FIVE YEARS B.ARCH. DEGREE COURSE
(A Ten semester integrated course)

THIRD SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1312	**Building Construction and Technology III**	2	0	0	70	30	75	175	2

UNIT 1	**Timber floor:** • Single • Double • Triple • Various joints between joists, lengthening of wall plates, etc. • Herring bone and solid strutting.
UNIT 2	**Timber roofs:** • Lean to type • Couple • Close couple • Collar.
UNIT 3	**Timber trussed roofs:** • King post • Queen post • Built up roof truss.
UNIT 4	**Industrial roofing:** • North Light roof trusses in steel • Monitor type steel trusses.
UNIT 5	**Industrial roofing:** • Tubular trusses • Built- in trusses in steel • Industrial roofing in R.C.C. • Industrial glazing in roofing. • Industrial cladding in roofing.

Note:

1. There shall be regular site visits to buildings, under construction or Constructed, to explain the above topics. Use of audio-visuals should be stressed.
2. Sessional work shall be done as scaled drawings on drawing sheets and freehand drawings along with occasional visits to construction sites.
3. In theory examination there will be a separate question from each unit with choice within the unit/question. All units/questions will be compulsory.

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SYLLABUS FOR FIVE YEARS B.ARCH. DEGREE COURSE
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THIRD SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1313	**Structural Design and systems III**	3	2	0	70	30	20	120	4

THEORY OF STRUCTURE

UNIT 1	• Arches, • Three hinged arches • Two hinged arches (parabolic and semi circular), • Temperature effect on arches
UNIT 2	• Euler's theory of long column, • Assumption and limitation of Euler formula, • Statically Indeterminate structure, • Difference between statically indeterminate and determinate Structure.
UNIT 3	• Theory and analysis of singly and doubly reinforced beam (no design) • Neutral axis of Beam section, • Lever arm, • Moment of resistance, • Balanced, unbalanced under reinforced and over reinforced section, • Introduction to R.C.C (W.S.M and L.S.M)
UNIT 4	• Introduction of prestressed concrete, • Basic concept, • Classification and • Types of prestressing system, • End anchorage, • Advantages and disadvantages of prestressed concrete • Advantages of prestressed concrete over reinforced concrete construction.
UNIT 5	• Bearing capacity of soil, • Types of soil (characteristic of black cotton soil). • Types of Structure (load bearing and framed), • Types of foundation, • Method of stabilization of soil.

Note:

1. Sessionals work shall include assignments/tests on the above topics.
2. In theory examination there will be a separate question from each unit with choice within the unit/question. All units/questions will be compulsory.

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THIRD SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1314	**Climatology**	3	1	0	70	30	30	130	4

UNIT 1	**Elements of climate**: • Constituents of climate, definition. • Measurement and Data collection with use of meteorological data, solar charts etc. • Classification of climate on global level and national level • Study of Microclimate and Macroclimate. • Effect of climate on man, shelter and environment
UNIT 2	**Principles of thermal comfort:** • Physiological impact of climate. • Comfort indices. Human comfort conditions – Comfort chart, Comfort Zone, Effective temperature, etc. • Natural and artificial methods of achieving thermal comfort — landscaping, building materials (U-values) etc.
UNIT 3	**Parameters of comfort conditions:** • Ventilation and air movement — spatial organization in buildings, layout and orientation of buildings in housing. • Natural Illumination and day lighting. • Artificial illumination and night lighting.
UNIT 4	**Climate conscious design-I**: • Introduction to traditional design measures / Vernacular architecture in various climates at Global level. • Architectural design considerations in various climatic zones in India —hot dry, warm humid, cold dry, cold humid, temperate, composite etc.
UNIT 5	**Climate conscious design-II**: • Use of different design aids at various climatic conditions • Study of materials and construction techniques for climate conscious design. • Case studies of climate conscious designs. • Application of wind and solar oriented architecture, introduction to climate oriented software and other analytical techniques.

Note:

1. Course would be run through lectures, Audiovisuals and site visits to various laboratories and buildings.
2. Sessional shall be in the form of reports, seminars, and design solutions on different units. The works of various building science laboratories be referred and discussed.
3. In theory examination there will be a separate question from each unit with choice within the unit/question. All units/questions will be compulsory.

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THIRD SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1315	**Building Materials and Science-III**	2	0	0	70	30	20	120	2

The subject aims at developing the understanding and knowledge of PROPRIETORY building materials regarding their availability, composition, properties, classification, uses and applications. Study of environmental conditions on various building materials and the science of design for creating effective human comfort conditions.

UNIT 1	**Synthetic Materials and Eco friendly Materials:** • Wallpapers • Polymers • Plastics • Laminated boards • Eco Boards • Soft Boards • Medium / High density fibre boards.
UNIT 2	**Materials For Specific Uses-I:** • Thermal insulation material, • Waterproofing materials, • Fire resistant materials. • Materials used in termite control.
UNIT 3	**Materials for specific uses-II:** • Materials used in electrical fittings, • Materials used in sanitation, • Materials used in water supply. • Acoustical materials.
UNIT 4	**Materials used for furniture construction:** • Timber, Bamboo, Cane, • Metals, • Foams, • Drapery, Upholstery, • Floor Coverings • Resins. • Plastic
UNIT 5	**By-product materials:** • Materials from industrial, agricultural and mineral wastes e.g. fly ash, furnace slag, lime kiln rejects, red mud, rice husk ash, saw dust, wooden chips, fibres, wood wool, etc,.

Note:

1. Sessional shall be in the form of reports, seminars and notes on above mentioned topics. The works of CBRI, NBO, HUDCO and other institutions be referred and discussed.
2. In theory examination there will be a separate question from each unit with choice within the unit/question. All units/questions will be compulsory.

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THIRD SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1316	**History of Architecture, Art and Culture- I**	3	1	0	70	30	50	150	4

UNIT 1	**History of Arts and Culture -I:** • Development of civilizations — different periods like Neolithic, prehistoric, Paleolithic etc. • Cultural developments of different periods at global level. • Introduction to Development of Arts up to medieval period at global level, • Six limbs of Art as per Indian tradition.
UNIT 2	**Early History of Architecture** • Global preview of prehistoric architecture • Indian architecture during Vedic period, Indus-Saraswati civilization • Cretan, Mayan, Mexican architecture
UNIT 3	**Egyptian Architecture** • Mastaba and tombs • Pyramids • Temples
UNIT 4	**West Asiatic Architecture** • Sumerian • Assyrian • Babylonian
UNIT 5	**Buddhist Architecture.** • Development at Asian level (China, Japan, SE Asia, Afghanistan etc.) • Indian examples and influences.

Note:

1. Course would be run through lectures, Audiovisuals and site visits to various buildings.
2. Sessional shall be in the form of small reports, seminars, Sketches on above-mentioned topics.
3. The discussions should be based on selected examples highlighting the aesthetical values, architectural features, construction techniques, materials used and philosophy of construction.
4. In theory examination there will be a separate question from each unit with choice within the unit/question. All units/questions will be compulsory.

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THIRD SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1321	**Architectural Design-III Studio**	0	0	6	50	0	0	50	3

The subject is a lab (studio) oriented subject and hence, the syllabus as specified in Architectural Design-III (1311) will be the same. The works done as sessionals will be evaluated by internal and external examiners at the end semester examination. For conduction of the practical (viva-voce) examination one external and one internal examiner may be appointed for a group of 15-20 students.

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THIRD SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1322	**Building Construction and Technology-III Studio**	0	0	3	25	0	0	25	2

The subject is a lab (studio) oriented subject and hence, the syllabus as specified in Building Construction and Technology-III **(**1312**)** will be the same. The works done as sessionals will be evaluated by internal and external examiners at the end semester examination. For conduction of the practical (viva-voce) examination one external and one internal examiner may be appointed for a group of 15-20 students.

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THIRD SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1327	**Disaster Management**	0	0	2	0	0	25	25	1

UNIT 1	**Introduction:** • Types of disaster, meanings and related definitions. • Principles of Disaster Management, Hazards, Risks and Vulnerabilities. • Assessment of Disaster Vulnerability of a location and vulnerable groups. • Causes and effects of natural hazards. • Disaster profile of India.
UNIT 2	**Disaster preparedness and response and rehabilitation:** • Preparedness and Mitigation measures for various Disasters • Preparation of Disaster Management Plans • School Awareness & Safety Programme. • Issues in Environmental Health, Water & Sanitation. Earthquake Mitigation, Floods, Fire, Landslides and other natural calamities.
UNIT 3	**Post Disaster Relief & Logistics Management:** • Emergency Support Functions and their coordination mechanism. • Resource & Material Management. • Management of Relief Camp. • Information systems & decision making tools.
UNIT 4	**Roles and responsibilities of different agencies:** • Voluntary Agencies & Community Participation at various stages of disaster management. • Integration of Rural Development Programmes with disaster reduction and mitigation activities. • Role of Remote Sensing, Science & Technology. • Rehabilitation Programmes. • New Initiative.
UNIT 5	**Case Studies of different Project Works like Bhuj, etc.**

Note:

Sessionals shall be evaluated in the form of small exercises / practical projects.

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THIRD SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1328	**Computer Application in Architecture**	0	0	3	25	0	30	55	2

1. Introduction and basic applications of operating software: like Windows, and Word processing software: MS Office (word, excel, access, power point etc. – formatting and putting formula in excel, data handling with access, etc.), PageMaker, Open Office etc.

2. Introduction to basic understanding of Architectural application software, such as Auto cad 2D and 3D modeling (creating shades and shadows, attaching materials and rendering),

3. Introduction to basic understanding of other software like Architectural Desktop, Corel draw, photoshop, Revit, Sketchup, Archicad etc.

4. Advanced professional application of software in rendering techniques, walkthrough, animations like Maya, 3D studiomax, etc.

5. Basic understanding of other applicable software for energy auditing, building simulation, introduction to GIS like Arcview, Mapinfo, and design build etc.

Note:

Sessionals shall be evaluated in the form of small exercises / practical projects.

NATIONAL INSTITUTE OF TECHNOLOGY RAIPUR

PROPOSED NEW SCHEME OF EXAMINATION FOR

TEN SEMESTER INTEGRATED COURSE OF B. ARCH.(APPLICABLE FROM 2010-11)

FOURTH SEMESTER

S.No.	Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
			L	**T**	**P**	**ESE**	**FE/ SE**	**TA**		
1	1411	Architectural Design IV	2	0	0	0	50	100	150	2
2	1412	Building Construction and Technology IV	2	0	0	70	30	75	175	2
3	1413	Structural Design and Systems IV	3	2	0	70	30	20	120	4
4	1414	Surveying and Levelling	2	1	3	70	30	20	120	4
5	1415	Human Settlements and Vernacular Architecture	3	0	0	70	30	30	130	3
6	1416	History of Architecture, Art and Culture II	2	1	0	70	30	50	150	3
7	1421	Architectural Design IV Studio	0	0	6	50	0	0	50	3
8	1422	Building Construction and Technology IV Studio	0	0	3	25	0	0	25	2
9	1427	Energy Efficient Architecture	0	0	2	30	0	0	30	1
10	1428	Measure Drawing & Study Tour	0	0	1	0	0	30	30	1
11	1429	Discipline						20	20	1
TOTAL			**14**	**4**	**15**	**455**	**200**	**345**	**1000**	**26**

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SYLLABUS FOR FIVE YEARS B.ARCH. DEGREE COURSE
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FOURTH SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1411	**Architectural Design-IV**	2	0	0	0	50	100	150	2

This subject aims at developing in students the skill to design building and small settlements with consideration to natural and manmade parameters. The assignments shall be Design of independent bungalows, farmhouses, combined units, duplex type and their cluster or grouping etc. along with relevant Building codes.

The design shall be handled with study of natural environmental factors, their impact and consideration by human settlements of a town or a part of a city, especially housing along with the study of Open spaces, activities in them. Emphasis on aspects like – climatic considerations and relationship with life style, consideration of design detailing in kitchens, toilets etc.

Two time problems (as class tests) are to be conducted in class other than regular design problems.

Note:

Sessional will be in the form of drawings and models along with project report for the design dealt. The evaluation shall be done in intermediate reviews consisting of internal and external experts. There should be regular site visits / case studies of buildings, so as to document them with the help of photographs, slides, etc.

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FOURTH SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1412	**Building Construction and Technology IV**	2	0	0	70	30	75	175	2

UNIT 1	**Shoring:** • Raking. • Flying. • Dead.
UNIT 2	**Special flooring and roofing:** • Industrial steel floor. • Fire proof roofing / flooring. • R.C.C. roof with timber flooring. • Stone slab roofing. • Stone floor on girder support.
UNIT 3	**Built in furniture:** • Wardrobe • Cupboard • Kitchen cabinet • Shelf, • Showcases • Bookshelf , racks, almirahs, etc.
UNIT 4	**Balconies and Stairs:** • Balconies in R.C.C. • Steel balconies. • Stairs (steel and timber).
UNIT 5	**Canopies:** • Designing of Porch, Canopies in R.C.C. and steel (including tubular). • Designing of Covered ways in steel & R.C.C. • Fixing details of lighting fixtures, rain water drainage systems, etc. in canopy.

Note:

1. There shall be regular site visits to buildings, under construction or Constructed, to explain the above topics. Use of audio-visuals should be stressed.
2. Sessional work shall be done as scaled drawings on drawing sheets and freehand drawings along with occasional visits to construction sites.
3. In theory examination there will be a separate question from each unit with choice within the unit/question. All units/questions will be compulsory.

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FOURTH SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1413	**Structural Design and Systems - IV**	3	2	0	70	30	20	120	4

R.C.C. STRUCTURE DESIGN – I (L.S.M)

UNIT 1	Analysis and design of singly and doubly reinforced beam.
UNIT 2	Design of flanged beam.
UNIT 3	Design of slab (one way & two way)
UNIT 4	Design of axially loaded column and column footing (Isolated)
UNIT 5	Design of stair cases (Dog legged and open well)

Note:

1. I.S. code 456 is permitted in examination.
2. Sessionals work shall include assignments/tests on the above topics.
3. In theory examination there will be a separate question from each unit with choice within the unit/question. All units/questions will be compulsory.

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FOURTH SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1414	**Surveying and Leveling**	2	1	3	70	30	20	120	4

UNIT 1	**Introduction of surveying:** • Aspects of surveying for the Architect. • Formulae used in measurement of land with geometrical and abstract configurations to work out Areas, volumes and other quantities.
UNIT 2	**Chain survey:** • Instrument used. • Selection of survey station. • Chain line, Offset, oblique offset, tie line, check lines, ranging. • Field book plotting.
UNIT 3	**Levelling:** • Various parts of dumpy level. • Temporary adjustment. • Interrelationship of bubble tube axis. • Line of collimation and vertical axis. • Levelling staff, technical term used in levelling. • Fly levelling (study of reciprocal levelling). • Introduction of contouring.
UNIT 4	**Plain table surveying:** • Introduction. • Equipment required. • Working with plain table. • Errors in plain table. • Advantage and disadvantage.
UNIT 5	**Construction surveying:** • Introduction. • Equipment for setting out. • Horizontal and vertical control. • Setting out a pipe line. • Setting out a building and structure (complete layout). • Staking out a highway.

Note:

1. Class work and fieldwork of the above subject should be oriented towards the layout of buildings and preparation of measured drawings. Students should also be taken to site visits for explaining the practical aspects of surveying.
2. Sessional work should include reports, drawings, and experiments etc. in assignment seminar form.
3. In theory examination there will be a separate question from each unit with choice within the unit/question. All units/questions will be compulsory.

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FOURTH SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1415	**Human Settlements and Vernacular Architecture**	3	0	0	70	30	30	130	3

UNIT 1	**Human Settlements-I** • Early human settlements — Causal factors and pattern of development. • Human settlements of River valleys civilization (e.g. Indus-valley civilization, Egyptian civilization, etc.) • Early Vedic civilization patterns. • Canonical patterns as per various Indian texts.
UNIT 2	**Human Settlements-II** • Human settlements during ancient Greek period. • Human settlements during ancient Roman period. • Human settlements during Medieval period (Western and Indian). • Human settlements in India during Islamic period.
UNIT 3	**Human Settlements-III** • Human settlements during Renaissance period. • Effects of Industrial Revolution on planning of cities (history and present scenario). • Human Settlements in India during colonial period.
UNIT 4	**Modern Human Settlements** • Modern planning concepts.— oriental and occidental. (For example, Garden city, Satellite townships, neighbourhood planning, Utopian concepts, various philosophies, etc.) • Study of new towns and towns developed after industrial revolution.
UNIT 5	**Vernacular Architecture** • Introduction and characteristics of vernacular architecture. • Materials and techniques of construction in vernacular architecture. • Study of vernacular architecture for various regions in India.

Note:

1. Sessional shall be in the form of reports, seminars and notes on above mentioned topics.
2. In theory examination there will be a separate question from each unit with choice within the unit/question. All units/questions will be compulsory.

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FOURTH SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1416	**History of Architecture, Art and Culture- II**	2	1	0	70	30	50	150	3

UNIT 1	**History of Arts and Culture -II:** • Development of Arts after Medieval Period—Oriental (Renaissance, Gothic, Rococo, Baroque and modern) • Development of Arts After Medieval — Occidental (Early Islamic, Mughal, Colonial, modern)
UNIT 2	**Western Classical Architecture** —Greek and Roman (with examples from temples, public buildings, palaces etc.) • Orders • Visual Corrections • Construction techniques
UNIT 3	**Brahmanical and Jain Architecture**: (with examples from temples, public buildings, palaces etc.) • North Indian • South Indian
UNIT 4	**Christian Architecture (Churches)** • Early Christian • Byzantine
UNIT 5	**Romanesque and Gothic (Churches)** • Study of various European styles with construction techniques, aesthetical principles, architectural philosophy.

Note:

1. Course would be run through lectures, Audiovisuals and site visits to various buildings.
2. Sessional shall be in the form of small reports, seminars, Sketches on above-mentioned topics.
3. The discussions should be based on selected examples highlighting the aesthetical values, architectural features, construction techniques, materials used and philosophy of construction.
4. In theory examination there will be a separate question from each unit with choice within the unit/question. All units/questions will be compulsory.

NATIONAL INSTITUTE OF TECHNOLOGY, RAIPUR.

SYLLABUS FOR FIVE YEARS B.ARCH. DEGREE COURSE
(A Ten semester integrated course)

FOURTH SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1421	**Architectural Design-IV Studio**	0	0	6	50	0	0	50	3

The subject is a lab (studio) oriented subject and hence, the syllabus as specified in Architectural Design-IV (1411) will be the same. The works done as sessionals will be evaluated by internal and external examiners at the end semester examination. For conduction of the practical (viva-voce) examination one external and one internal examiner may be appointed for a group of 15-20 students.

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FOURTH SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1422	**Building Construction and Technology-IV Studio**	0	0	3	25	0	0	25	2

The subject is a lab (studio) oriented subject and hence, the syllabus as specified in Building Construction and Technology-IV **(**1412**)** will be the same. The works done as sessionals will be evaluated by internal and external examiners at the end semester examination. For conduction of the practical (viva-voce) examination one external and one internal examiner may be appointed for a group of 15-20 students.

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FOURTH SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1427	**Energy Efficient Architecture**	0	0	2	30	0	0	30	1

1. Types, availability and reserves of conventional and non-conventional energy sources.

2. Assessment of energy consumption in a building and methods of energy conservation: -

   (a) Through minimizing wastages.
   (b) Through appropriate use of climatology
   (c) Through appropriate design and planning of buildings.

3. Introduction to solar energy efficient architecture, Study of solar radiation on earth surface. Measurement, angles, estimation and analysis, Orientation of building, with reference to solar radiation. Special design and planning detailing. Active solar architecture. Passive solar architecture.

4. Introduction to wind oriented architecture, study and analysis of micro level wind. Design and planning of building considering winds.

5. Study of energy efficient building material and construction techniques. Case study national and international examples. Studio problem.

Note:

Sessional work should include reports, drawings, and experiments etc. in assignment seminar form.

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FOURTH SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1428	**Measure Drawing and Study Tour**	0	0	1	0	0	30	30	1

Educational tours to the places of architectural interest shall be organized as per the programme approved by the department. The documentation shall be done in the form of photographs / slides and sketches presented in form of a seminar and written report immediately after the tour.

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FOURTH SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1429	**Discipline**	–	–	–	–	–	20	20	1

The marks of this subject are based on the yearly performance, behaviour, conduct, active participation, discipline and attendance of the students.

NATIONAL INSTITUTE OF TECHNOLOGY RAIPUR

PROPOSED NEW SCHEME OF EXAMINATION FOR

TEN SEMESTER INTEGRATED COURSE OF B. ARCH.(APPLICABLE FROM 2010-11)

FIFTH SEMESTER

S.No.	Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
			L	**T**	**P**	**ESE**	**FE/ SE**	**TA**		
1	1511	Architectural Design V	2	0	0	0	50	100	150	2
2	1512	Building Construction and Technology V	2	0	0	70	30	75	175	2
3	1513	Structural Design and Systems V	3	2	0	70	30	20	120	4
4	1514	Building Services and Equipments I	3	1	0	70	30	20	120	4
5	1515	Building Bye-laws and Codes of Practices	2	1	0	70	30	30	130	3
6	1516	History of Architecture, Art and Culture III	2	1	0	70	30	50	150	3
7	1521	Architectural Design V Studio	0	0	6	50	0	0	50	3
8	1522	Building Construction Technology V Studio	0	0	3	25	0	0	25	2
9	1527	Working Drawing I	0	0	5	30	0	50	80	3
TOTAL			**14**	**5**	**14**	**455**	**200**	**345**	**1000**	**26**

NATIONAL INSTITUTE OF TECHNOLOGY, RAIPUR.

SYLLABUS FOR FIVE YEARS B.ARCH. DEGREE COURSE
(A Ten semester integrated course)

FIFTH SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1511	**Architectural Design-V**	2	0	0	0	50	100	150	2

The subject aims at developing creativity for designing imaginative built forms with application of principles and theory of architectural design and philosophies of contemporary architects. The attempt is towards developing one's own language and philosophy of architecture to guide towards exploring alternative building forms for different activities which help in understanding the relationship of structure and possibilities in building forms. Design problems shall include problems of simple and complex nature i.e. Religious buildings, residential complexes, gathering places, clubs, cafés, community halls, museums, art galleries, pavilions, sport complexes, hospitals, polyclinics, factories.

Emphasis shall be given more on three-dimensional studies to develop an understanding for man and space relationship and also relevant building byelaws.

There should be variety of problems in the studio work with changing focus for each problem from theory to construction techniques (local) and site layouts, including organization and detailing of open spaces with an aim to learn working with practical limitations.

Two time problems (as class tests) are to be conducted in class other than regular design problems.

Note:
Sessional will be in the form of drawings and models along with Technical report for the design dealt. The evaluation shall be done in intermediate reviews consisting of internal and external experts. There should be regular site visits to buildings, dealt in studio problems, so as to document them with the help of photographs, slides, etc.

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FIFTH SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1512	**Building Construction and Technology V**	2	0	0	70	30	75	175	2

UNIT 1	**Special openings-I** • Design and Constructional details of sliding, • Sliding folding, • Side hung doors • Revolving doors, • Sliding windows in timber • Sliding windows in metal
UNIT 2	**Special openings-II** • Fully glazed door, in metal. • Rolling shutter • Collapsible gates.
UNIT 3	**Curtain walls** • Introduction to curtain wall construction, its advantages, shading, structural glazing, etc. • Metal and aluminium sectioned curtain wall. • R.C.C. curtain wall • Special purpose curtain wall with reflective glazing, insulation, etc.
UNIT 4	**Special entrances** • Study of steel railing, jali, grills, and ladders. • Design and construction details of fixed glazing • Study of compound wall (including advance type) with security arrangement • Study of wicket gate and large entrance gates rolling on wheels.
UNIT 5	**Finishes and surface treatments** • Study of expansion joints, waterproofing and roof light. • Study of details of various methods of common façade treatments. • Study of details of various methods of common interior finishes.

Note:

1. There shall be regular site visits to buildings, under construction or Constructed, to explain the above topics. Use of audio-visuals should be stressed.
2. Sessional work shall be done as scaled drawings on drawing sheets and freehand drawings along with occasional visits to construction sites.
3. In theory examination there will be a separate question from each unit with choice within the unit/question. All units/questions will be compulsory.

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FIFTH SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1513	**Structural Design and Systems V**	3	2	0	70	30	20	120	4

STRUCTURE DESIGN-II (STEEL STRUCTURE)

UNIT 1	Steel joint and connection
UNIT 2	Design of compression member
UNIT 3	Design of tension member
UNIT 4	Design of steel beam (simple and built up beam)
UNIT 5	**Industrial building:** • Introduction, • Planning, • Types, • Roof and side covering, • Element of Industrial building (no design), • Only design steps, for industrial building (no detail design)

Note:

1. Steel table & I.S. code 800 is permitted in examination.
2. Sessionals work shall include assignments/tests on the above topics.
3. In theory examination there will be a separate question from each unit with choice within the unit/question. All units/questions will be compulsory.

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FIFTH SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1514	**Building Services and Equipments-I**	3	1	0	70	30	20	120	4

The subject aims at developing the understanding and knowledge of fundamentals of all types of services required in a building. To learn various equipments and fittings available in the market and to prepare basic design layout of various services and its details.

UNIT 1	**Sanitation-I** • Basic principles of sanitation • Introduction to modern plumbing system. • Study of Indian standards and plumbing byelaws (NBC). • General introduction to various sanitary fitting & fixtures, their placement, functions and constructional details. • Study of internal & external drainage system including study of duct for various buildings including small residences, apartments, block of houses, public buildings etc.
UNIT 2	**Sanitation-II** • Study of various types of sanitary pipes, construction of joints and laying of pipes. • Study of Traps, Inspection chambers, Manholes, Septic tanks, Soak pits, and Public sewage line. • Study of Disposal systems for domestic effluent from fitting to sewer line. • Study of low cost sanitary systems (SULABH COMPLEXES) and other CBRI details. • Study of storm water disposal at site and settlement level.
UNIT 3	**Sanitation-III** • Importance of sanitary services in the economics of buildings. • Study of refuse chutes and service floors in multistoried buildings. • Planning & design for disposal of urban /rural effluent. • Various methods of collection, treatment, disposal, and recycle of urban /rural effluent including wastewater and city solid wastes.
UNIT 4	**Water Supply-I** • Sources of water, types of water. • Water treatment for domestic purpose. • Quality of potable water. • Rain water harvesting system. • Recycling of water.
UNIT 5	**Water Supply-II** • Study of water storage and supply network. • Calculation of water supply requirements based on Indian standards (BIS and NBC). • Architectural approach to plan the domestic water storage facilities and water distribution system in a building and settlement, along with study of fixtures, fittings, accessories, equipments and construction details thereof.

Note:

1. Sessional will be prepared in the form of sanitation schemes, water supply schemes and design of toilets of the given building or buildings.
2. In theory examination there will be a separate question from each unit with choice within the unit/question. All units/questions will be compulsory.

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(A Ten semester integrated course)

FIFTH SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1515	**Building Bye-Laws and Codes of Practices**	2	1	0	70	30	30	130	3

UNIT 1	**Introduction:** • Building bye-laws – their need and importance, advantages. • Study of building bye-laws - means of access, open spaces, parts of buildings (as per NBC).
UNIT 2	**Building Bye-Laws-I** • Building bye-laws with respect to various plot sizes, building types and height restrictions, air funnel. • Lighting, sound and HVAC (as per NBC). • Fire fighting regulations • Parking regulations
UNIT 3	**Building Bye-Laws-II** • Building bye-laws for special zones viz., airport, hospitals, residential, commercial, Cinema theatres, SEZ etc. • Development control and aesthetic control bye-laws, sky plane, front and rear angles. • Other building standards including state and municipal byelaws
UNIT 4	**Development controls at settlements level.** • Eminent domain, police powers, zoning controls, etc. • Sub-division regulations. • Land development standards and municipal byelaws in various states.
UNIT 5	**Special regulation:** • Codal provision for disaster mitigation (earthquake, urban floods, landslides etc.) • Coastal area regulations.

Note:

1. In theory examination there will be a separate question from each unit with choice within the unit/question. All units/questions will be compulsory.
2. Sessional shall be in form of exemplary assignments to be submitted as notes, and collection of cases regarding professional practice in the field.

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FIFTH SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1516	**History of Architecture, Art and Culture- III**	2	1	0	70	30	50	150	3

UNIT 1	**Renaissance Architecture:** • Italian • French • English • German
UNIT 2	**Early Islamic Architecture** • Development of ancient Islamic Architecture (global) • Development of Islamic Architecture (Indian) pre-Mughal rule (Delhi Sultanate)
UNIT 3	**Indian Islamic Provincial Architecture —** • Central India • East India • West India • South India
UNIT 4	**Indian Islamic Architecture during Mughal Rule** • Pre Akbar period • Akbar –Jahangir period • Reign of Shajahan • Aurangzeb and after
UNIT 5	**Colonial Architecture** • Introduction • Regional influence • Indo-saracenic style • Influence of early industrialization

Note:

1. Course would be run through lectures, Audiovisuals and site visits to various buildings.
2. Sessional shall be in the form of reports, seminars, Sketches on above-mentioned topics.
3. The discussions should be based on selected examples highlighting the aesthetical values, architectural features, construction techniques, materials used and philosophy of construction.
4. In theory examination there will be a separate question from each unit with choice within the unit/question. All units/questions will be compulsory.

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SYLLABUS FOR FIVE YEARS B.ARCH. DEGREE COURSE
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FIFTH SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1521	**Architectural Design-V Studio**	0	0	6	50	0	0	50	3

The subject is a lab (studio) oriented subject and hence, the syllabus as specified in Architectural Design-V (1511) will be the same. The works done as sessionals will be evaluated by internal and external examiners at the end semester examination. For conduction of the practical (viva-voce) examination one external and one internal examiner may be appointed for a group of 15-20 students.

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SYLLABUS FOR FIVE YEARS B.ARCH. DEGREE COURSE
(A Ten semester integrated course)

FIFTH SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1522	**Building Construction and Technology-V Studio**	0	0	3	25	0	0	25	2

The subject is a lab (studio) oriented subject and hence, the syllabus as specified in Building Construction and Technology-V **(**1512**)** will be the same. The works done as sessionals will be evaluated by internal and external examiners at the end semester examination. For conduction of the practical (viva-voce) examination one external and one internal examiner may be appointed for a group of 15-20 students.

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FIFTH SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1527	**Working Drawing - I**	0	0	5	30	0	50	80	3

The aim of this subject is to train the students to enable them to make the detailed and accurate drawings so as to be executed in construction on site.

1. Introduction to various building components and precise purpose of set of working drawings. Study of each drawing with reference to specification & schedules of various building materials.

2. Preparations of check list as guide for list of working drawings. Study of building byelaws for various construction details. Method of representing various contents & specific information in working drawings.

3. Preparation of municipal drawings and importance of working drawing as a legal document and tender document.

4. One set of working drawing of any load bearing structure along with large-scale details of any specifically designed situations.

5. List of drawings:
   - Corporation drawing
   - Center line plan
   - Excavation plan
   - Footing layout plan, footing detail
   - Beam (ground beam and plinth beam),beam detail
   - Sill level plan, schedule of openings
   - Lintel level plan
   - Slab level ,slab beam detail
   - Frame detail

Note:

Sessional shall be in the form of full set of working drawing and design details of given building. The sessional marks will be based upon the portfolio submitted and internal viva.

NATIONAL INSTITUTE OF TECHNOLOGY RAIPUR

PROPOSED NEW SCHEME OF EXAMINATION FOR

TEN SEMESTER INTEGRATED COURSE OF B. ARCH.(APPLICABLE FROM 2010-11)

SIXTH SEMESTER

S.No.	Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
			L	**T**	**P**	**ESE**	**FE/ SE**	**TA**		
1	1611	Architectural Design VI	2	0	0	0	50	100	150	2
2	1612	Building Construction and Technology VI	2	0	0	70	30	75	175	2
3	1613	Structural Design and Systems VI	3	2	0	70	30	20	120	4
4	1614	Building Services and Equipments II (Electrical & Mechanical)	3	1	0	70	30	20	120	4
5	1615	Estimation, Costing and Specifications	2	0	0	70	30	30	130	2
6	1616	Modern Architecture	2	1	0	70	30	50	150	3
7	1621	Architectural Design VI Studio	0	0	6	50	0	0	50	3
8	1622	Building Construction and Technology VI Studio	0	0	3	25	0	0	25	2
9	1627	Working Drawing II	0	0	6	30	0	30	60	3
10	1628	Discipline						20	20	1
TOTAL			**14**	**4**	**15**	**455**	**200**	**345**	**1000**	**26**

NATIONAL INSTITUTE OF TECHNOLOGY, RAIPUR.

SYLLABUS FOR FIVE YEARS B.ARCH. DEGREE COURSE
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SIXTH SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1611	**Architectural Design- VI**	2	0	0	0	50	100	150	2

This program gives special emphasis on role of technology in architecture. The design projects to be dealt in the studio should respond to the importance of structure, services and acoustical treatments.

Exercises related to public buildings i.e. commercial centre, hospital, auditorium, cinema, sports complex & educational buildings on sloping/flat sites. Study and incorporation of building byelaws should be complete in this Semester.

Simultaneously, stress should be given on the interior treatment of small and large spaces. Freedom in design is to be given with preliminary introduction of importance and role of byelaws in building design. Minimum one time problem is to be attempted in class, in addition to the major design problems.

Note:
Sessional will be in the form of drawings and models along with Technical report for the design dealt. The evaluation shall be done in intermediate reviews consisting of internal and external experts. There should be regular site visits to buildings, dealt in studio problems, so as to document them with the help of photographs, slides, videocassettes etc.

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SIXTH SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1612	**Building Construction and Technology VI**	2	0	0	70	30	75	175	2

UNIT 1	**Beams:** • Simply supported • Continuous • Cantilever • Inverted • L & T beams • Lintels & chhajjas • Details at odd junctions • Formwork of beams.
UNIT 2	**Slab:** • One way • Continuous • Two way slab • Flat slab • Waffle slab • Reinforced brick slab. • Formwork of slabs.
UNIT 3	**Foundation I:** • R.C.C. column footings, • Foundations for workshops and machines. • Formwork of foundation with column.
UNIT 4	**Foundation II:** • Various types of Pile foundations, • Raft foundations, • Grillage foundations. • Special Foundations, shallow foundations.
UNIT 5	**Staircases & Ramps:** • Types of staircases • Detail of R.C.C. • R.C.C. ramps. • Formwork of Staircases & Ramps.

Note:

1. There shall be regular site visits to buildings, under construction or Constructed, to explain the above topics. Use of audio-visuals should be stressed.
2. Sessional work shall be done as scaled drawings on drawing sheets and freehand drawings along with occasional visits to construction sites.
3. In theory examination there will be a separate question from each unit with choice within the unit/question. All units/questions will be compulsory.

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SIXTH SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1613	**Structural Design and Systems VI**	3	2	0	70	30	20	120	4

STRUCTURE ANALYSIS

UNIT 1	Slope deflection method in simply supported and cantilever beams for point load and U.D.L.
UNIT 2	Moment distribution method (Beam only)
UNIT 3	Approximate method for an analysis of frames by portal and cantilever method.
UNIT 4	Kani's method (continuous beam only)
UNIT 5	Column analogy for beam with different moments of Inertia.

Note:

1. Sessionals work shall include assignments/tests on the above topics.
2. In theory examination there will be a separate question from each unit with choice within the unit/question. All units/questions will be compulsory.

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SIXTH SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1614	**Building Services and Equipments-II (Electrical &Mechanical)**	3	1	0	70	30	20	120	4

The subject aims at developing the understanding and knowledge of fundamentals of all types of services required in a building. To learn various equipments and fittings available in the market and to prepare basic design layout of various services and its details.

SECTION-A (ELECTRICAL)

UNIT 1	**Basic Electrical Services:** • Fundamentals of electricity. • Principles of wiring. • Study of various fixtures, fittings, accessories and equipments used in installation of electrical services in small, large and multistoried buildings of various types viz. residential, commercial, public, industrial etc.
UNIT 2	**Planning and design of electrical services in various types of buildings:** • Calculation of electric load and its phasing. • Schematic diagram of electric installations with use of symbols. • Study of special fixtures like lightning conductors, earthing, waterproof and spark proof installations, stabilizers, circuit breakers etc. and installation thereof. • Study and application of relevant rules and regulations of Electricity boards.
UNIT 3	**Illumination:** • Principles of lighting including calculations for desired illumination on different working planes for various activities like reading, writing, drawing, domestic works, industrial jobs etc. • Designing of lighting for various types of buildings like residential, educational, offices etc. • Lighting for special purposes viz. Exhibitions, Theaters, Stadiums, Swimming pools, Cinemas, Assembly halls, Restaurants, Religious buildings etc along with study of Direct, Indirect, Flood, Concealed, Focus light etc. • Over illumination controlling measures.

SECTION-B (MECHANICAL)

UNIT 4	• The fundamental principles of Psychometrics and heat transfer. • Methods of Air conditioning, Fittings, fixtures, accessories and equipment used in various types of air-conditioning along with their construction details and basic load calculations. • A.C. duct design and layout with constructional details. (Including calculations.)
UNIT 5	• Lifts and movable walkways, escalators including study of their operation, function, layouts and design details. • Appliances, equipments and systems for fire safety of buildings, (particularly high rise) including study of their function, operation and construction details.

Note:

1. The sessional shall be in form of notes, home assignments, schematic layout/drawing for layout of installation of various electrical and mechanical services in given building.
2. There will be separate question papers from Electrical services and Mechanical services having 3 questions (of 14 marks each; total of 42 marks) from Electrical services and 2 questions (of 14 marks each; total of 28 marks) from Mechanical services.
3. The passing marks will be the sum of both sections, (i.e., Electrical services + Mechanical services).

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SIXTH SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1615	**Estimation, Costing and Specifications**	2	0	0	70	30	30	130	2

UNIT 1	**Specifications-I:** • Importance and methods of drafting specification in buildings • Use of Indian standard specification and PWD/ CPWD handbook, specifications affecting cost. • Method of specification writing (trade wise practice, item of completed works) • Standard clauses/ instructions for various items of work for the contractor, owner, Architect, sub- contractor. • Explanation of extra items, their necessity and other items created for change of specifications.
UNIT 2	**Specifications-II:** • Specification for a structure from excavation up to finishing in superstructure. • Material specification (timber and its products, metals, water proofing materials, materials used in roofing and roof covering, etc.) • Exercise on specification writing of load bearing structure, R. C. C. frame structure and steel frame structure.
UNIT 3	**Introduction to Estimation:** • Types of estimates. • Methods of preparing estimates. • Data required for making an estimate. • Introduction to Quantity Survey.
UNIT 4	**Methods of estimation and rate analysis:** • Mensuration, Standard Mode of measurements, Schedule of rates, Commercial abbreviations, Methods and procedure of taking off abstractions, Working up and Billing, Examples and exercises for above from excavations to finishing. • Rate analysis, Cost of materials and labour for various works, Measurement of work for interim and final certificates for payment to contractors.
UNIT 5	**General terms:** • Administrative approval, Technical sanction, Competent authority, Deposit work, Issue rates, Payment on accounts, Suspense account, Imprest, Indent of Stores, Muster roll, Measurement book, Materials site account, Establishment charges etc. • Methods and Contents of technical report and proposals for obtaining administrative/technical/financial approval/sanctions.

Note:

1. In theory examination there will be a separate question from each unit with choice within the unit/question. All units/questions will be compulsory.
2. Sessionals shall be in form of exemplary assignments to be submitted as notes, and collection of cases regarding professional practice in the field.

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SYLLABUS FOR FIVE YEARS B.ARCH. DEGREE COURSE
(A Ten semester integrated course)

SIXTH SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1616	**Modern Architecture**	2	1	0	70	30	50	150	3

UNIT 1	**Introduction of Modern Architecture** • Effect of industrialization and development of modern architecture. • Review of the development of Architecture on global level related to all influencing factors regarding evolution of styles. • Movement of Modernism including various Architectural and aesthetical philosophies and concepts.
UNIT 2	**Determinants of Physical forms:** • Understanding the determinants of physical form viz: Space, Structure, Organization, Symbolism, Order, Datum, Axis, Surface, Mass, Void, Scale, Proportion, Harmony, Contrast, Rhythm, Balance, Accentuation etc. based on the comparison between the past development and modern movement.
UNIT 3	**Works of Architects:** • Study of Modern Architecture based on works and concepts of exemplary Indian and Non-Indian modern architects in 20^{th} and 21^{st} century like Louis Sullivan, F. L. Wright, Louis Kahn, Le Corbusier, Philip Johnson, Charles Correa, Michael Graves, etc. • Study of environmental design and technology with reference to trend setting works of contemporary architects, designers. Ecologists, engineers etc.
UNIT 4	**Design Parameters of Modern Architecture** • Communication and Interpretations of Modern and Contemporary Architecture based on study of literature and existing buildings to understand design parameters principles process, methods, and programme-formulation for design.
UNIT 5	**Trends of Modern Architecture:** • Relationship of modern architecture with social-cultural developments. • Relationship of modern architecture with modern Arts. • Introduction to Non-conventional architectural trends — bio mimicry, intelligent buildings, nano architecture, deconstruction etc. • Futuristic trends —utopian architecture.

Note:

1. Course would be run through lectures, Audiovisuals and site visits to various buildings.
2. Sessional shall be in the form of reports, seminars, Sketches on above-mentioned topics.
3. The discussions should be based on selected examples highlighting the aesthetical values, architectural features, construction techniques, materials used and philosophy of construction and culture.
4. In theory examination there will be a separate question from each unit with choice within the unit/question. All units/questions will be compulsory.

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SIXTH SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1621	**Architectural Design VI Studio**	0	0	6	50	0	0	50	3

The subject is a lab (studio) oriented subject and hence, the syllabus as specified in Architectural Design-VI (1611) will be the same. The works done as sessionals will be evaluated by internal and external examiners at the end semester examination. For conduction of the practical (viva-voce) examination one external and one internal examiner may be appointed for a group of 15-20 students.

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SIXTH SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1622	**Building Construction and Technology-VI Studio**	0	0	3	25	0	0	25	2

The subject is a lab (studio) oriented subject and hence, the syllabus as specified in Building Construction and Technology-VI **(**1612**)** will be the same. The works done as sessionals will be evaluated by internal and external examiners at the end semester examination. For conduction of the practical (viva-voce) examination one external and one internal examiner may be appointed for a group of 15-20 students.

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SIXTH SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1627	**Working Drawing - II**	0	0	6	30	0	30	60	3

The subject is a continuation of the subject (1527). The preliminaries, methodologies etc have been already taught.

1. One set of complete working drawing of a framed structure with emphasis of building services.

Note:

Submission of the sessional shall be in the form of full set of working drawing and design details of given building. The sessional marks will be based upon the portfolio submitted and internal viva.

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SIXTH SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1628	**Discipline**	–	–	–	–	–	20	20	1

The marks of this subject are based on the yearly performance, behaviour, conduct, active participation, discipline and attendance of the students.

NATIONAL INSTITUTE OF TECHNOLOGY RAIPUR

PROPOSED NEW SCHEME OF EXAMINATION FOR

TEN SEMESTER INTEGRATED COURSE OF B. ARCH.(APPLICABLE FROM 2010-11)

SEVENTH SEMESTER

S.No.	Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
			L	**T**	**P**	**ESE**	**FE/ SE**	**TA**		
1	1711	Architectural Design VII	2	0	0	0	50	100	150	2
2	1712	Building Construction and Technology VII	2	0	0	70	30	75	175	2
3	1713	Advanced Structural Design and Systems	3	2	0	70	30	20	120	4
4	1714	Town Planning and Landscape	3	1	0	70	30	20	120	4
5	1715	Project Introduction	2	1	0	0	100	50	150	3
6	1716	Elective - I	2	1	0	70	30	30	130	3
7	1721	Architectural Design VII Studio	0	0	6	50	0	0	50	3
8	1722	Building Construction Technology VII Studio	0	0	3	25	0	0	25	2
9	1727	Elective - II	0	0	5	50	0	30	80	3
TOTAL			**14**	**5**	**14**	**405**	**270**	**325**	**1000**	**26**

Elective – I: - 1. Urban Design
2. Architectural Conservation
3. Housing

Elective – II: - 1. Interior Design
2. Art in Architecture
3. Advanced Computing

NATIONAL INSTITUTE OF TECHNOLOGY, RAIPUR.

SYLLABUS FOR FIVE YEARS B.ARCH. DEGREE COURSE
(A Ten semester integrated course)

SEVENTH SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1711	**Architectural Design VII**	2	0	0	0	50	100	150	2

1. In the design studio stress shall be given on building design with use of modern technology. Multi-storeyed building with use of lifts, escalators, air conditioning etc. Stress is also to be given on detailing of the services, parking and fire fighting.

2. Problem should be of different nature in terms of scale, site potentials and constraints. E.g. Factories, Film Studios, Computer Centres, Hotel, Multi-storeyed offices, Apartments. Commercial Centres etc.

   Two time problems, in addition to regular studio assignment shall be given.

Note:

Submission of the Sessional will be in the form of drawings and models along with Technical report for the design dealt. The evaluation shall be done in intermediate reviews consisting of internal and external experts. There should be regular site visits to buildings, dealt in studio problems, so as to document them with the help of photographs, slides, videocassettes etc.

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SYLLABUS FOR FIVE YEARS B.ARCH. DEGREE COURSE
(A Ten semester integrated course)

SEVENTH SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1712	**Building Construction and Technology VII**	2	0	0	70	30	75	175	2

Design and drawing of constructional details of:

UNIT 1	Shop fronts, including interior of shops for storage, display etc.
UNIT 2	Suspended ceilings and false flooring for services.
UNIT 3	Partitions and screens.
UNIT 4	Wall panelling, sound proof construction including various types of materials and construction details. Various interior and exterior surface treatments such as cladding, lining, rendering etc.
UNIT 5	Design details of different types of counters for various shops, banks, post offices, jewellers store, general merchandise shops, bar counters etc.

Note:

1. There shall be regular site visits to buildings, under construction or Constructed, to explain the above topics. Use of audio-visuals should be stressed.
2. Sessional work shall be done as scaled drawings on drawing sheets and freehand drawings along with occasional visits to construction sites.
3. In theory examination there will be a separate question from each unit with choice within the unit/question. All units/questions will be compulsory.

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Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1713	**Advanced Structure Design and Systems**	3	2	0	70	30	20	120	4

ADVANCED R.C.C. SRTUCTURE DESIGN (L.S.M)

UNIT 1	Design of combined footings (rectangular).
UNIT 2	Design of flat slab.
UNIT 3	Design of column (Biaxial bending) (By using S.P.16).
UNIT 4	Design of beam curved in plan.
UNIT 5	Detailing of Earthquake Resistance construction • Introduction • Cyclic behaviour of concrete and reinforcement • Significance of ductility • Ductility of beam • Design for ductility • Detailing for ductility

Note:

1. I.S. code 456 and S.P. 16 shall be permitted in examination.
2. Computer aided design of structure (with SAP or other relevant software) could be taught in tutorial classes.
3. Computer aided practical classes could be taken up.
4. Sessionals work shall include assignments/tests on the above topics.
5. In theory examination there will be a separate question from each unit with choice within the unit/question. All units/questions will be compulsory.

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Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1714	**Town Planning and Landscape**	3	1	0	70	30	20	120	4

This course is intended to give elementary knowledge of subject pertaining to town planning.

UNIT 1	**Principles of Planning:** • Types of planning • Elements of planning • Surveys • Landuses • Character • Densities.
UNIT 2	**Introduction to planning processes** • Zoning, zoning regulations • Site planning. • Types of plans- development plans, action plans, structure plans, • Planning process • Master plan (Development plan) and its components
UNIT 3	**Planning techniques and theories:** • Approaches to physical planning • Internal structures of town. Inner city development. • Various theories of planning like landuse theory, exploratory theories, speculative theories etc. • Systems approach, mixed scanning approach, choice theory.
UNIT 4	**Other aspects of planning:** • Introduction to housing – typology, standards, infrastructure and policies. • Introduction to transport planning – Network characteristics, Intersections, design of roads, survey methods. • Legal aspects of planning –police power, eminent domain, development controls, Urban local bodies, specific Acts like Land Ceiling (and Regulation), Land acquisition act. Various policies and programs of State and Central Government.
UNIT 5	**Landscape Planning:** • Brief introduction to landscape architecture • Role of landscape planning • Landscape as a tool in planning • Environmental consideration in landscape planning • Hierarchy of open spaces • Social forestry.

Note:

1. There shall be visits to office of town and country planning to understand the process and problems.
2. Submission of Sessional work shall be done as plan proposal for small town planning scheme, housing, site layout of urban or rural sites drawn to scale.
3. In theory examination there will be a separate question from each unit with choice within the unit/question. All units/questions will be compulsory.

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SEVENTH SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1715	**Project Introduction**	2	1	0	0	100	50	150	3

UNIT 1	**Definition:** • What is research – formation of hypothesis? • Types of research. • Social research vis-à-vis architectural research.
UNIT 2	**Formation of research methodology:** • Formation of goal. • Formation of scope and limitation. • Data collection – process and methods. • Analysis – statistical and other. • Output of research.
UNIT 3	**Various types of Architectural researches:** • Interpretive historical research. • Qualitative research. • Co-relational research. • Experimental and quari-experimental research. • Simulation and modeling research. • Logical argumentation. • Case studies and combined strategies.
UNIT 4	**Report writing:** • Styles. • Salient features. • Bibliography writing • Citation, etc.
UNIT 5	**Dissertation on Thesis:** • The objective of introducing dissertation is to develop the research aptitude and its presentation in the form of seminar. The work shall be done on any topic known theories, established practices etc related to the field of architecture. It is advisable that the selected topic may have relevance with the proposed topic of thesis.

Note:

- The topic shall be selected by the student must consultation with the coordinator and the guide.
- The dissertation work will be evaluated a stages and the final report shall be submitted type written neatly on standard A-1 size paper of one side only in single spacing (max. 15 pages) supplemented with photographs pasted at appropriate places. Sketches etc. The final presentation will be in the form of seminar.

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Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1716	**Elective-I: Urban Design**	2	1	0	70	30	30	130	3

To appreciate the nature and role of various facets of Urban Design in the making of the built environment.

UNIT 1	**Introduction to the role and scope of Urban Design:** • Introduction: Relationship with architecture and Town Planning. • Determinants and factors of urban forms such as landform, climate, symbolism, activity patterns, socio-cultural factors, materials, techniques and other contextual factors. Case examples from various periods in history and different parts of the world.
UNIT 2	**Vocabulary of Urban Design** • Vocabulary of Urban Design, Urban Patterns, Grain, fabric, texture, Density etc, • Concepts of Imageability. Elements of the city's image, paths, nodes, landmarks, edges, districts, focal point, vista etc. — their characteristics, role and interrelationship. Visual survey. • Concept of sense of place and space, division of space, sequence of spaces. • Barrier free design
UNIT 3	**Visual Composition** • Principles of visual composition; proportion, scale, rhythm, symmetry, harmony, datum, balance, form, colour, texture etc. • Designing parts of the city: Systems of communication and utility, visual expression, accent and contrast, urban character, landscape features etc. • Figure-background relationship
UNIT 4	**Urban spaces** • Types of urban spaces, streets, square, precinct, piazza, mall etc. • Various elements of urban spaces through history. Role of public places in the contemporary city. • Design principles, scale and enclosure • Case studies of well known urban spaces from various periods of history to illustrate their design and performance aspects. • Concept of spaces and structures as examples of Public Arts.
UNIT 5	**Urban design legislation and Urban Renewal** • Role of legislation and controls in the built environment. • Analysis of Urban Legislations of Delhi, Mumbai etc. Role of Urban Arts Commission. • Aesthetical Legislations, Case examples of aesthetic controls in various cities, etc. their basis, characteristics and problems of implementation and enforcement. • Introduction to Urban Heritage, Urban conservation, Urban renewal practices.

Note:

1. Sessional assignment will be based on case studies of old and new townships, city centres; complexes etc. along with proposal for urban design scheme for the same other situations.
2. In theory examination there will be a separate question from each unit with choice within the unit/question. All units/questions will be compulsory.

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SEVENTH SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1716	**Elective-I: Architectural Conservation**	2	1	0	70	30	30	130	3

The subject has been introduced to inculcate in students importance and need of maintenance of continuation in development with due respect to the development in the past.

UNIT 1	**History and modes of architectural conservation** • Definition • Importance & need of conservation. • Various aspects of conservation of natural and manmade environment. • Classification of conservation — cultural, historical, urban areas.
UNIT 2	**Process of Conservation** • Listing and documentation, its importance and methods. • Measures of conservation i.e. protection, maintenance, restoration, reconstruction, adoption and adaptation. • Various methods applied for conservation of architectural buildings with examples.
UNIT 3	**Cultural Heritage** • Concept of heritage structures • Various methods adopted for conservation of heritage structures in India and Abroad. • Theories of identification and conservation of heritage structures.
UNIT 4	**Conservation management** • Methodologies to be adopted for conservation management. • Case studies in conservation related to adoptive reuse, building in context, preservation, urban conservation.
UNIT 5	**Conservation Legislations:** • Study of various charters, Acts relation to conservation of heritage structures. • Role of INTACH, UNESCO, ICOMOS, ASI, and other organizations. • Various methods/legislations adopted for encouraging conservation.

Note:

1. Sessional assignment will be based on selection of a conservation project & presentation of proposal in seminars.
2. In theory examination there will be a separate question from each unit with choice within the unit/question. All units/questions will be compulsory.

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SEVENTH SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1716	**Elective-I: Housing**	2	1	0	70	30	30	130	3

UNIT 1	**Introduction:** • Introduction to housing, Housing terminology, standards, scope, Housing typology (construction and economic considerations) • Housing Infrastructure. • Housing at micro to macro level.
UNIT 2	**Housing scenario:** • Need of housing in Indian and Global context, • Housing scenario in Indian context, Housing shortage in urban and rural areas. • Slums and squatters, Informal housing. • Affordable housing, Core housing, Community housing, Industrial housing. • Low-rise high density, High-rise low density, High-rise high density housing
UNIT 3	**Housing Strategies** • Government housing strategies • Housing survey, methodologies and inferences. • Study of housing density, legislation and byelaws.
UNIT 4	**Housing Policies** • Framing housing policy for a proposed scheme with consideration to nature of development. • National and State Housing policies. • Systems approach to housing. • Environmental consideration, housing for disaster prone areas.
UNIT 5	**Housing finance:** • Role of financial institutions • Co-operative housing schemes • Gramin Bank Model • Government measures for slum upgradation and rehabilitation.

Note:

1. Sessional assignment will be based on unit 5 and will be presented in form of seminars.
2. In theory examination there will be a separate question from each unit with choice within the unit/question. All units/questions will be compulsory.

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SEVENTH SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1721	**Architectural Design-VII Studio**	0	0	6	50	0	0	50	3

The subject is a lab (studio) oriented subject and hence, the syllabus as specified in Architectural Design-VII (1711) will be the same. The works done as sessionals will be evaluated by internal and external examiners at the end semester examination. For conduction of the practical (viva-voce) examination one external and one internal examiner may be appointed for a group of 15-20 students.

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SEVENTH SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1722	**Building Construction and Technology-VII Studio**	0	0	3	25	0	0	25	2

The subject is a lab (studio) oriented subject and hence, the syllabus as specified in Building Construction and Technology-VII **(**1712**)** will be the same. The works done as sessionals will be evaluated by internal and external examiners at the end semester examination. For conduction of the practical (viva-voce) examination one external and one internal examiner may be appointed for a group of 15-20 students.

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SEVENTH SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1727	**Elective-II: Interior Design**	0	0	5	50	0	30	80	3

This subject aims at developing a holistic approach towards design by considering internal space utilization, along with the impact of visual experience on the total space character.

UNIT I	**Introduction** • Understanding the role of interior design in total design process. • Procedure of Interior design. • Impact of the interior space on human psychology and behavior. • Historical background of interior design on global level.
UNIT II	**Elements and components of interior design** • Study of considerations for interior design such as Space, planes, Form, Color, texture. • Abstract and formal configuration, geometrical disciplines, visual controls, illusions with their separate and combined impact. • Generating character in interiors through use of materials, colors, styles etc. • Principles of space planning through Orientation, Privacy, Grouping, Flexibility, Circulation, Furniture arrangements, etc.
UNIT III	**Materials in interior:** • Surfaces, viz. walls, floor , ceilings etc. • Furniture, lose and built-in. • Upholstery, drapery. • Rugs ,carpets and other floor coverings. • Water bodies, planters and plantation. • Decorative features like paintings, sculptures.
UNIT IV	**Services in interior design:** • Impact of elements used for thermal comfort, • Electrical wiring system and fixtures • Acoustical treatment in interiors and their role in design, • Illumination, light sources and fixtures, • Building services etc and design measures to handle them.
UNIT V	**Design scheme:** • Complete design scheme of interiors for spaces having different uses and requirements such as Reception halls, Waiting lounges, Restaurants, foyers, Drawing halls, Offices, Residential spaces, Exhibition halls, Hotels, Theatres, Assembly Halls etc.

Note:

Sessional shall be prepared in the form of notes and sketches, schematic and scale drawings etc. on above topics.

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SYLLABUS FOR FIVE YEARS B.ARCH. DEGREE COURSE
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SEVENTH SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1727	**Elective-II: Art in Architecture**	0	0	5	50	0	30	80	3

This course is a lecture/seminar oriented course, whose purpose is to combine historical research with creative approaches to art and its meanings. The course will allow students to develop familiarity with the critical issues surrounding architecture and public art in urban space from historical eras, while also applying that knowledge to a particular example of public art in India.
The course will cover the following broad areas:

- Geometry in art and architecture (golden ratio etc.)
- Spheres in architecture
- Geometric patterns in Architecture
- Solids —concepts of Archimedes, Plato; musical expression in architecture
- Vitruvius' & Michael Angelo' proportions etc.
- Number symbolism in context of Vedic to Middle ages (Europe).
- Symbolism in architecture —myths and celestial themes —art frames.
- Origin of Views —European perspective and Indian views.
- Façade measurement Arts by trigonometry.
- Representation of modern art in architecture, Art and computer.

Note:

Submission of the sessionals shall be prepared in the form of notes and sketches, schematic and scale drawings etc. on above topics.

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SEVENTH SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1727	**Elective-II: Advanced Computing**	0	0	5	50	0	30	80	3

1. Basic knowledge and use of software's like ArchiCAD, Revit, Sketchup, etc.
2. Use of rendering software's like 3DStudioMax, Adobe Photoshop, Maya, etc.
3. Advanced use of AutoCAD, Auto LISP, etc.
4. Basic knowledge of other calculating software's like SPSS, etc.
5. Programming (simple) in software's like C, C++, VB, Mat lab, etc.
6. Animation preparation of Walkthrough of building projects.

Note:
Submission of the sessionals shall be in the form of small exercises and written assignments.

NATIONAL INSTITUTE OF TECHNOLOGY RAIPUR

PROPOSED NEW SCHEME OF EXAMINATION FOR

TEN SEMESTER INTEGRATED COURSE OF B. ARCH.(APPLICABLE FROM 2010-11)

EIGHTH SEMESTER

S.No.	Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
			L	**T**	**P**	**ESE**	**FE/ SE**	**TA**		
1	1811	Professional Practice	3	0	0	70	30	30	130	3
2	1812	Elective - III	4	0	4	70	30	50	150	6
3	1813	Thesis Project	8	0	0	0	0	450	450	8
4	1823	Thesis Project Studio	0	0	9	150	0	0	150	5
5	1824	Elective - IV	0	0	5	50	0	50	100	3
6	1825	Discipline						20	20	1
TOTAL			**15**	**0**	**18**	**340**	**60**	**600**	**1000**	**26**

Elective – III: - 1. Sustainable Architecture
2. Environmental Planning
3. Construction Management

Elective – IV: - 1. Modular Coordination and Industrialized Building
2. Intelligent Building
3. Landscape Design
4. Visual Communication

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EIGHTH SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1811	**Professional Practice**	3	0	0	70	30	30	130	3

Introduction to the professional, vocational and legal aspects of architectural practice.

UNIT 1	• Profession vocation, trade union vis-à-vis professional activities, social obligations of profession, architectural professional association in its role and responsibilities. • Architects Act 1972/87. Council of Architecture, its role and responsibilities.
UNIT 2	• Code of professional conduct. • Condition of engagement and scale of professional fees. • Copyright Act as applicable to architectural work. • Architectural competitions.
UNIT 3	• Concept of Contract. • Duties and liabilities of architects, duties and liabilities of contractors. • Articles of agreement, execution of works and payments. • Arbitration, the Act, its applications, and its scope. • Laws pertaining to property matters like Right of easements, passage, ancient light etc.
UNIT 4	• Tenders types and the process of calling, security and selection system. • Pre- Tender qualifications and registration of contracts. • Office organizations and management, expense, structure, salaries and overheads. • Role of design staff and supporting managerial staff; Personal management and training responsibilities.
UNIT 5	• Introduction to Valuation. • Role of Valuers • Types , methods and importance of valuation

Note:

1. In theory examination there will be a separate question from each unit with choice within the unit/question. All units/questions will be compulsory.
2. Sessional shall be in form of exemplary assignments to be submitted as notes, and collection of cases regarding professional practice in the field.

NATIONAL INSTITUTE OF TECHNOLOGY, RAIPUR.

SYLLABUS FOR FIVE YEARS B.ARCH. DEGREE COURSE
(A Ten semester integrated course)

EIGHTH SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1812	**Elective-III: Sustainable Architecture**	4	0	4	70	30	50	150	6

UNIT 1	**Introduction to sustainability** • Introduction to the ideas, issues and concepts of sustainable Architecture, • Global environment and the built environment, • Principles of environmentally and ecologically supportive architecture.
UNIT 2	**Study of sustainable practices** • Study of sustainable architecture through traditional practices • Use of energy, materials, health and global environment as related to the construction and operation of buildings.
UNIT 3	**Sustainable and conservation practices** • Water conservation, • Sewerage treatment, • Solid waste treatment, • Economics and management.
UNIT 4	**Energy systems** • Low energy design, • Hybrid systems, • Modelling and simulation of energy systems, • Integration of PV and wind systems in the building, wind solar and other renewable energy systems, • Solar thermal applications for heating and cooling • Self Electricity generation in buildings.
UNIT 5	Case studies on specific contemporary sustainable architecture examples in India and abroad.

Note:

1. In theory examination there will be a separate question from each unit with choice within the unit/question. All units/questions will be compulsory.
2. Sessional shall be in form of exemplary assignments to be submitted as notes, and collection of cases regarding professional practice in the field.

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EIGHTH SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1812	**Elective-III: Environmental Planning**	4	0	4	70	30	50	150	6

UNIT 1	**FACTORS AND PARAMETERS** • Elements of environmental planning. • Area of environmental planning assessment. • Sustainable human development. • Main spheres of environmental planning ie bio physical environment, socio economic environment and built environment etc.
UNIT 2	**ENVIRONMENTAL QUALITY** Evaluation of factors, planning measures and legal tools to control: • Air pollution, • Water pollution, • land Pollution • Noise pollution, etc
UNIT 3	**ENVIRONMENTAL POLICIES AND LEGISLATION** • The wild life (protection) act • The air act • The Water act 1974 • The forest conservation act • The environmental protection act • Notification on coastal regulation zone • Worlds summits to safeguard the environment and • Different energy audits like RT2000,basix,leed,griha etc.
UNIT 4	**ENVIRONMENTAL ASSESSMENT TOOLS** • Advanced techniques and tools for predicting environmental constraints. • Importance and methods of Environmental impact assessment.
UNIT 5	**CASE STUDIES** • Various international summits • National and international examples and awareness programs.

Note:

1. In theory examination there will be a separate question from each unit with choice within the unit/question. All units/questions will be compulsory.
2. The sessional assignments will be based on case studies with data collection, surveys and other observations and will be presented in form of seminars.

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EIGHTH SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1812	**Elective-III: Construction Management**	4	0	4	70	30	50	150	6

UNIT 1	**Introduction:** • Introduction to project management concepts, objectives, goals and different aspects of management. • Traditional management system. • Gantt's approach, bar charts, project programming, time estimates etc.
UNIT 2	• Project programming, • Resource balancing, • Phasing of activities, • Programme scheduling, • Project control, reviewing, updating and monitoring, • Modern management concepts.
UNIT 3	• Project Assessment & project cost jobs size, divisions of responsibilities, liason with owners and their representatives, feasibility study, project report, construction-financing facilities etc.
UNIT 4	**Construction Management:** • Conditions of contract, their application, quality and quantity controls, time and cash contract, recording, checking and certifying with coordination of all building activities.
UNIT 5	**Project monitoring:** • C.P.M. P.E.R.T. & other one-dimensional techniques for project planning scheduling and control.

Note:

1. In theory examination there will be a separate question from each unit with choice within the unit/question. All units/questions will be compulsory.
2. Sessional shall be in form of exemplary assignments to be submitted as notes, and collection of cases regarding professional practice in the field.

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Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1813	**Thesis Project**	8	0	0	0	0	450	450	8

OBJECTIVES

All the four years of learning architectural design and allied subjects culminate in design thesis project to motivate a student in investigative attitude individual methodology. Thus to train in handling projects independently.

PROJECT

Each student will select a subject of an architectural interest in consultation with the committee appointed by the Head / Principal of the Dept. / Institution. The subject will have to be approved at the beginning of the eighth semester. The evolution of the thesis project will be continuous and the student will have to give at least three seminars / submission. The thesis project shall be submitted in the form of bound report, drawings, models etc. in a manner as stipulated in THESIS MANUAL on the date prescribed by the University.

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EIGHTH SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1823	**Thesis Project Studio**	0	0	9	150	0	0	150	5

The subject is a lab (studio) oriented subject and hence, the syllabus as specified in Thesis Project (1813) will be the same. The works done as sessionals will be evaluated by internal and external examiners at the end semester examination. For conduction of the practical (viva-voce) examination one external and one internal examiner may be appointed for a group of 15-20 students.

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EIGHTH SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1824	**Elective-IV: Modular Co-ordination and Industrialized building**	0	0	5	50	0	50	100	3

UNIT 1	**Development of Modular Architecture:** • Development of theories of modular architecture. • Advantages, scope and limitations of modular architecture.
UNIT 2	**Introduction to Modular Systems:** • Various elements of buildings that could be modular walls, roofs, doors and windows, partitions, etc. • Various materials used in modular architecture. • Pre-stressed and post-tensioned modular systems.
UNIT 3	**Modular Architecture and Co-ordination:** • Basic management policies in modular co-ordination. • Prefabricated structures: their uses with examples and techniques of constructions.
UNIT 4	**Introduction & origins of the Industrialised Concept:** • Definition of Industrialisation. • Study of historical background of industrialized building in other countries. • The Indian experience. • Study of CBRI and SERC works. • Use of latest construction techniques like Tunnel form system, Triple S System, etc.
UNIT 5	**Aspects of industrialisation:** • Case Studies of Industrialised Buildings in India and abroad. • Scope & limitations on applicability in industrial housing etc. • Socio-economic situations, spatial requirements. • Application of Industrialisation in Mass Housing.

Note:

Submission of the sessionals shall be prepared in the form of notes and sketches, schematic and scale drawings etc. on above topics.

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EIGHTH SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1824	**Elective-IV: Intelligent Building**	0	0	5	50	0	50	100	3

UNIT 1	**Introduction** • Introduction & Origins of the Intelligent Buildings Concept. • Definition and characteristics of Intelligent Buildings with brief history and contemporary concept. • Automated buildings, • Responsive buildings.
UNIT 2	**Facility Management** • Study of Concepts of Management of facilities, • Importance and study of planning and operational techniques for facility management. • various models of Building Intelligence.
UNIT 3	**Services** • Demands on building and services, • Control systems, • Study of development of Computer Integrated Building from single function systems to integrated solutions. • Use of building intelligence in energy management.
UNIT 4	**Key Issues for Intelligent Buildings** • Multiple activity settings, • Generic analysis of space utilization. • Models for shared space use. • The development of briefing process including design activity and building elements, life cycles, Coordination between life cycle, building technologies. • Study of issues related to site, shell, skin, services and technology.
UNIT 5	**Intelligent design and construction** • Effective Space utilisation, • Expectations of user, effective communication of architectural concepts to user, Locating people and information, • Introduction to building efficiency with respect to life cycle costs.

Note:

The Sessional assignment will include collection of information from various sources including treatises in vernacular languages, case studies of important buildings and proposals in light of above study. The same will be presented in reports and seminars.

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EIGHTH SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1824	**Elective-IV: Landscape Design**	0	0	5	50	0	50	100	3

The objective of this subject is to introduce students about landscape architecture thereby enhancing the outdoor environmental quality in architectural design.

UNIT 1	• Definition of landscape its scope and importance in architecture • Planning levels of landscape planning (micro to macro level). • Role of Landscape Architecture in Sustainable Development
UNIT 2	• Landscape design process, information needed for landscape survey. • Land, water & plants as landscape elements, their functional & aesthetical considerations in landscape design. • Man made elements in landscape design-lamp posts, sign boards, garbage bins, fences etc.
UNIT 3	• Plantation – Understanding plant material as a design tool. • Design characteristics of plants, selection of plant materials for roof gardens, atriums, avenues, road side plantation, court yards, parking areas, near water bodies, indoor areas, etc. gardening notes including study of soil, fertilizers etc.
UNIT 4	Principles and design philosophy of history of landscape architecture • Mughal • Japanese gardens • Renaissance • 18^{th} century – Brownian • 19^{th} century – Botanical gardens. • Dutch Landscape • English Landscape. • Contemporary Landscape Architecture.
UNIT 5	• Complete landscape design schemes for situations ranging from residential landscape to settlements considering all the above aspects along with land grading, grading process & methods of estimating earth volumes, slopes for various outdoor functional activities, surface runoff calculations & design of surface drainage system, treatment of ground surfaces, kinds of paving materials, etc.

Note:

Submission of the sessionals shall be prepared in the form of notes and sketches, schematic and scale drawings etc. on above topics.

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EIGHTH SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1824	**Elective-IV: Visual Communication**	0	0	5	50	0	50	100	3

This is a lecture/seminar based course for developing conceptual skills and design processing in the context of communication. To provide the students to gain broad-based visual communication design skills with an emphasis on ideas, that prepares them for better representation of architecture, built form and built environment as a visual communication medium. The course is to develop visual communication skills through photography, videography, videocology and sketches with documentation of historical and modern architectural examples. The course is to cover the following:

- Study of Visual Language - critical study of visual elements, features and principles.
- Relationship between syntactic, semantics and pragmatics.
- Viewpoints, point of reference and framing.
- Relationship of colour, form and meaning.
- Principles of visual dynamics and its analysis in 2D and 3D
- Spatial relationship, grids, compositions and layout in 2 and 3 dimensional spaces, built form, and built environment.
- Analysis of Aesthetics- the structure of Appearance. Form in nature, Exploration of visual images with analogies from nature and relating those to architectural forms.
- Study on Indian thought and philosophy and its relation to visual communications.
- Meaning of our festivals, mythology, the nature of religious ceremonies and other cultural diversities, various Indian symbols and the process by which they are represented in Architecture through visual communication.

Note:

Submission of the sessionals shall be prepared in the form of notes and sketches, schematic and scale drawings etc. on above topics.

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EIGHTH SEMESTER B. ARCH.

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
1825	**Discipline**	–	–	–	–	–	20	20	1

The marks of this subject are based on the yearly performance, behaviour, conduct, active participation, discipline and attendance of the students.

NATIONAL INSTITUTE OF TECHNOLOGY RAIPUR

PROPOSED NEW SCHEME OF EXAMINATION FOR

TEN SEMESTER INTEGRATED COURSE OF B.ARCH. (APPLICABLE FROM 2010-11)

NINTH AND TENTH SEMESTER

S.No.	Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
			L	**T**	**P**	**ESE**	**FE/ SE**	**TA**		
1	11021	Professional Training	0	0	40	500	0	500	1000	20 x 2
TOTAL			**0**	**0**	**40**	**500**	**0**	**500**	**1000**	**40**

NATIONAL INSTITUTE OF TECHNOLOGY, RAIPUR.

SYLLABUS FOR FIVE YEARS B.ARCH. DEGREE COURSE
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NINTH AND TENTH SEMESTER B. ARCH.(PHASE-II)

Subject Code	Subject	Periods per week			Scheme of Examination			Total Marks	Credit [L+{(T+P)/2}]
		L	T	P	ESE	FE / SE	TA		
11021	**Professional Training**	0	0	40	500	0	500	1000	20 x 2

Students can proceed for Phase-II (Professional Training) only after acquiring pass grades in all eight semesters (Phase-I).

The students will have to complete practical training under a registered architect for a period of two semesters (one year) so as to qualify for obtaining the final B. Arch degree. The candidate will have to submit to the Department, the training report (in stipulated format with drawings) along with the certificate by the employer to the effect that he / she has completed training satisfactorily for a period of two semesters. The student has to appear for the viva examination as per the exam as per schedule announced by the Institute at the end of the training period.

There would be no examination at the end of Ninth Semester. So there is no need fill examination form for Ninth Semester.

The students are required to get fresh admission for Tenth Semester at the date as declared by the Institute (in between the training period) as per the norms of the ‘Ordinance and Regulations’.

The examination form of Tenth Semester should be filled as per the schedule of the institute.