B.Sc Architecture basics (2020)

REGULATIONS, COURSE STRUCTURE & DETAIL SYLLABUS BASED ON CHOICE BASED CREDIT SYSTEM (CBCS of UGC)

And as per approved NEP-2020

PREAMBLE

The creation of Architecture that endures rather than architecture that surrenders to the latest trends, is a very crucial issue in the education of a professional dealing with architecture consultancy and Allied/Para architecture domain. The practice of architecture, however is not a static endeavour that can be easily defined by fixed and precise characteristics, it evades with the ever changing demands and development of the society. The ability to resist trends yet still respond to most of the changes, it evolves an understanding of the past and present as well as a concern for the future.

Education of such a professional must therefore emphases both continuity and change to prepare the students to meet the demand of the profession as a whole. Given the dynamic & complex nature of architecture, its education involves not only what constitutes a course of study, but how it is delivered.

This course curriculum for IKG PTU Main/Constituent campus is an attempt in this direction. All efforts have been taken to incorporate the guidelines of concerned statuary bodies. The syllabus is broadly based on Choice Based Credit System (CBCS) policy of UGC/MHRD(GoI).

The Reason to Start this course:

a) And consequent upon **Supreme court ruling dated 17 March 2020 that Architecture act 1972 protects only the Title and Style of 'Architect' and as per section 37 it do not Prohibit non Architects to practice architecture in the country** and its cognate activities. And a strong realization that a large middle class Indian society by enlarge engage them due to numerous reason, economic consideration is one of the strongest.

b) And it is a matter of acceptance that the society needs to be served well all such intended individuals who have missed the chance to join B.Arch also needs to be equipped/trained in the nuisances of design procedures and skilled to handle their work efficiently.

c) In addition to the above it is evident from the data that not more than 5% graduate architects earn respectfully from their Design Practice all others are in some kind of employment related to Architecture or have diversify in other domains even after spending precious 05 years of their youth.

d) This under graduate course is designed as per the guidelines given by the UGC and flexibility provided & it fulfils the norms of regulatory authorities w.r.t MOOCs and fall in line with the recently approved NEP 2020

Basic Architecture Education

Since architecture is created as synthesis of reason, emotion, and intuition, architectural education should be regarded as the manifestation of the ability to conceptualize, co-ordinate, and execute the idea of building rooted in human tradition. Architecture is an *interdisciplinary field* that comprises several major components which includes Humanities, Social, Physical Sciences and creative arts on one hand and Engineering & Technology on the other hand. This basic course targets to develop the graduate as a generalist able to resolve potential contradictions between different requirements, giving form to the society's and the individual's shelter as well as environmental needs.

The Basic Architecture education involves the acquisition of the following:

- An ability to create architectural designs that satisfy both aesthetics and technical requirements.
- An adequate knowledge of the history and theories of architecture and the related arts, technologies, and human sciences.
- Knowledge of the fine arts as an influence on the quality of architectural design.

- An understanding of the relationship between people and buildings, and between buildings and their environment, and of the need to relate buildings and the spaces between them to human needs and scale.
- An understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take into account social factors.
- An understanding of the methods of investigation and preparation of the brief for a design project.
- An understanding of the structural design, constructional, and engineering problems associated with building design.
- An adequate knowledge of physical problems and technologies and of the function of buildings so as to provide them with internal conditions of comfort and protection against the climate.
- The design skills necessary to meet building user's requirements within the constraints imposed by cost factors and building regulations.
- An adequate knowledge of the industries, organizing, regulations, and procedures involved in translating design concepts into buildings and integrating plans into overall planning.

ARCHITECTURE AS PROFESSION AND AS A BUSINESS:

There is increasing recognition today of Architecture as an intellectual discipline, both as art & science and as a profession. Through architectural design, Architects make vital contribution in defining and shaping our environment and future of society with the use of appropriate technologies for a diverse range of situations, both in the rural and urban contexts.

Considering the diverse Indian complexities in terms of social, cultural, geographical, climatic, economic and technical aspects, which are unique and typical of every region in our country, the task for professionals of Architecture becomes all the more challenging on one hand and paying on other.

Making provision of most optimum and sustainable solutions/ options, to address the basic needs of living, working and care of body and soul (three basic human functions) of even the poorest of the poor, to lead a productive and dignified life, demand appropriate skills, understanding, knowledge and a deep commitment to professed ideals.

Architecture encompasses all four endeavors of human existence i.e. Art, Science, Humanities and Technology. Conventionally Architecture involves three pillars of i) Form ii) Function, iii) Aesthetics, three new pillars are added to the profession in contemporary scenario i.e. iv) Environment v) Energy vi) Management. There had been paradigm shift in the role of such a person in a profession from conventional (i.e. designed focused professional) to team leader or expert (i.e as Coordinator or Facilitator) who work in a team of professionals handling multi dimensional projects with multi disciplinary approach. Architecture therefore now encompasses the *design, visualization, and aesthetic coordination, structural conceptualization, writing skills, effective communicative skills, legal knowledge, specification and supervision and giving responsible direction to the erection of buildings and enhancement of built environment*. The professional practice of architecture further includes the provision/delivery of services in relation with the site, design, physical planning, construction, addition, alteration, renovation, remodeling, restoration, conservation or adaptive reuse of a building or a group of buildings. With this in consideration emphasis is therefore laid in this curriculum for the holistic development of students.

BACKGROUND INFORMATION

To bridges the gap between theory and practice MHRD under AICTE has framed following **larger objectives** of an Architecture program.

1. Understanding the basic philosophy and fundamental principles of the multidimensional aspects and multi-faceted nature of architecture.
2. Preparing the students to acquire and enhance creative problem solving skills including critical thinking and assessment and developing design concepts and solutions and presentation of these skills.
3. Performing standard proficiencies, in harmony with the scope of local practice of architecture in particular and the global practice in general i.e. **making the student market ready or employable.**
4. Preparing the students to work effectively in a multi-disciplinary/inter-disciplinary team in the building industry, by providing 360o knowledge of architecture.
5. Directing and focusing the thrust of architecture education to the needs and demands of society and its integration for social, economic, cultural, and environmental aspects of nation building.
6. Instilling receptiveness to new ideas and knowledge and infusing a sense of scientific research.
7. Developing the overall personality and professional confidence of the student towards all the stakeholders in the building industry.

The objectives of the program are translated into a number of **LEARNING OUTCOMES**. These outcomes are directly related to the profession of architecture, the way it is practiced in the country and the knowledge components that are necessary for such professional practice. Towards the end, the students who complete this program will possess the ability to:

1. Understand the real-life situation in architectural practice and recognize the dialectic relationship between people and the built environment (especially with reference to the Indian sub-continent) with reference to their needs, values, behavioural norms, and social patterns.

2. Thrive in a rigorous intellectual climate which promotes inquiry through design research.

3. Work collaboratively toward synthetic design resolution which integrates an understanding of the requirements, contextual and environmental connections, technological systems and historical meaning with responsible approach to environmental, historical and cultural conservation.

4. Apply visual and verbal communication skills at various stages of the design and delivery process.

5. Produce professional quality graphic presentations and technical drawings/documents.

6. Critically analyze building designs and conduct post-occupancy evaluations.

7. Work in a manner that is consistent with the accepted professional standards and ethical responsibilities.

8. Work in collaboration with and as an integral member of multi-disciplinary/interdisciplinary design and execution teams in the building industry.

9. Conduct independent and directed research to gather information related to the problems in architecture and allied fields

SAILIENT FEATURES OF NATIONAL EDUCATION POLICY 2020

As already approved by the union cabinet in the last week of July 2020 the said policy envisioned:

- India possesses the highest number of young people of any country entering higher education over the next decade, and the extent **to which high quality educational opportunities are presented to them** will determine the direction of the future of India and its people.

- Indeed, with the quickly changing employment and global ecosystem, it is becoming increasingly important that children not only learn, **but learn how to learn**.

- Education must thus, **move towards less content, and more towards learning about how to think critically and solve problems**, how to be creative and multi disciplinary, and how to innovate, adapt, and absorb new material in novel and changing fields.

- Pedagogy must evolve to make education more **experiential, holistic** and integrated, discovery oriented, learner-centered, discussion-based**, flexible**, and, **of course, enjoyable**.

- The curriculum must include basic arts, crafts, humanities, games, sports, languages, literature, culture, and values, in addition to science and mathematics, in order to develop all sides of learners' brains and make education more well-rounded, useful, and fulfilling to the learner.

- Education must aim to be character-making, enabling learners to be ethical, rational, compassionate, and caring, while at the same time preparing them for gainful, fulfilling employment.

- The National Education Policy lays special emphasis on the development of the creative potential of each individual, in all its richness and complexity. It is based on the principle that education must develop not only cognitive skills - both 'foundational skills' of literacy and numeracy and 'higher-order' cognitive skills such as critical thinking and problem solving – but also social and emotional skills - also referred to as 'soft skills' - including cultural awareness and empathy, perseverance and grit, teamwork, leadership, communication, among others.

- The principles that will guide both individual institutions, and the education system at large, are: **flexibility, so that learners have the ability to choose their learning trajectories and programmes, and thereby choose their paths in life according to their own talents interests; no hard separations between arts and sciences, between curricular and extracurricular activities, between vocational and academic, etc., to ensure the integrity and unity of knowledge**

UGC RECOMMENDATIONS FOR UG PROGRAM UNDER CHOICE BASED CREDIT SYSTEM (CBCS):

In light of NEP, UGC has already initiated several steps to bring equity, efficiency and academic excellence in higher education system by including innovation and improvement in course curricula, teaching learning process and examination systems.

The present education system is producing young minds which lack knowledge, confidence, values and skills. There is a big gap in the education, employment and skill development in the present education system and Architecture is no exception to this. There is a dire need to transform the prevalent teacher centric education system to learner centric approach in the entire education delivery mechanism.

This revision is an earnest approach in this direction

There shall be flexibility for students to study the subjects/courses of their choice which may be inter disciplinary, intra disciplinary and skill/vocational based courses. This can be possible by adopting choice based credit system (CBCS) which offers opportunities and avenues to learn professional core subjects along with exploring additional avenues of learning beyond the core subjects for holistic development of an individual.

VISION

To become a Centre of Excellence in Built Environment studies with a strong research and teaching environment that adapts swiftly to the needs of dynamic society, industry and challenges of the 21st century. Target is to produce technically sound, socially responsible professionals suitable for to provide architectural consultancy, serve in the allied architecture and design fields (Para architecture) imbibed with knowledge and values with proficiency in requisite skills. And ready to serve the society in all possible manners.

MISSION

- To create a favourable environment for the students to evolve as persons with high ethical values, professional qualities, creativity and leadership skills to face any real time challenges.

- To impart outcome based education for attaining professional excellence in design and architecture as well as to address futuristic architectural demands.
- To foster creative spirit in our students to evolve as innovative citizens through dedication, responsibility, innovation in training, continuous improvement and conviction in human values.

Framework for B.Sc Architecture Basics Curriculum

The program shall be called Bachelor of Science (Architecture Basics) and shall be of 03 years duration as prescribed by University Grant Commission (UGC) under notification dated July 5, 2014.

The curriculum is divided into 06 semester (Three years) duration after 10+2. The curriculum provides for choice-based learning to make the students explore their own areas of interest by choosing from array of Elective subjects and MOOC courses. Curriculum is carefully distributed into compulsory courses from **Professional Core courses** (PC's), **Building Sciences and Applied Engineering courses** (BS&AE), **Professional Ability enhancement courses** (PAEC), **Skill Enhancement courses** (SEC) and Professional electives (PE) & Open electives (OE). The choice-based learning is introduced in the form of Electives and MOOC's as early as 3rd sem and continue to culmination up to 6th sem. Where in 2nd year (3rd and 4th sem) students can choose two elective/MOOC/ per semester and in 3rd year (5th and 6th sem) students are to choose three electives one each from PAEC/ MOOC, Professional Elective/MOOC and Open Elective/MOOC.The curriculum proposes horizontal and vertical integration of all the courses in a carefully calibrated manner, keeping Professional core (PC) and Building sciences and Applied Engineering (BS &AE) as the central discipline.

ABOUT PC, BS&AE, PAEC AND SEC COMPULSORY COURSES

Compulsory subjects constitutes courses from Professional Core (PC), Building Sciences and Applied Engineering (BS&AE), Professional Skill Enhancement Course (PAEC) and Skill Enhancement Courses (SEC). This program aims at attaining a high level of excellence in Architectural Design (PC) with sound knowledge of Construction (BS&AE). To this end, the Architectural Design and Building Construction & Materials is seen as the core of the program with supportive inputs from skill enhancement courses (SEC) from other streams like Professional, Technological and Humanities to built upon a strong foundation of enabling skills in communications, understanding and analyzing .The emphasis is on the development of faculties of discernment and decision-making with the aid of both objective information and subjective attitudes, based on reason and logic.

The **Professional Core** (PC) consists of Architecture Design, Architecture Drawing, Architecture Graphics/ Presentation, and Building Byelaws and Architecture Legislation. A total of 50 out of 160 credits.

Building Sciences and Applied Engineering courses (BS&AE) consist, Building constructions and Materials, Structure System, Theory of Structure, Structure Design, Surveying & Leveling, Building Services, Estimating Costing & Specification of 54/160 credits.

Professional Ability enhancement courses (PAEC) consists of Theory of Design, History of Architecture , Climate & Architecture & Sustainability, Professional /industrial Training 18/160.

Skill Enhancement courses (SEC) consists of Workshop Practice Communicative English and Communicative Skill Lab, Human Values and professional ethics, Life Skills, Environmental Science, Mentoring and Professional development, Computer Application, Educational Tour/ Summer Training, Constitutional Law and Indian traditional knowledge of 24/160 credits.

Architectural Design, being the core discipline of the course has been dealt in detail and major guidelines have been framed regarding the specific content of these courses. Design tests and group design exercise have been introduced so as to aim for both individual and collective excellence in equal measure. Special emphasis will be

laid on the organization of seminars in all the courses in all streams so that students get opportunities in public speaking and become more articulate in direct presentation of their ideas/thoughts & engage in individual research and holistic development.

As per NEP/UGC guidelines to emphasize on conceptual understanding, on creativity and critical thinking (to encourage logical decision-making and innovation), on values and ethics, and on life skills (e.g., cooperation, teamwork, communication, resilience); subjects on Universal Human Values, Life Skills, Mentoring and Professional ethics are included compulsorily up to 6th semester. It is believed that this will help the students to explore one-self and experience the joy of learning. This shall help them stand up to peer pressure, take decisions with courage, create awareness about the relationship with colleagues and supporting staff in the hostel, department and immediate social environment, etc.

Purpose of this is essentially to create a favourable environment for the students to evolve as persons with high ethical values, professional qualities, creativity and leadership skills to face any real time challenges.

ABOUT VARIOUS PE, OE AND MOOCS

As per UGC guidelines for choice based credit system to shift in focus of education from teacher-centric to Student centric, it is suggested to offer 15% courses as Professional Electives/Department Specific Electives.

A total of 04 Professional electives (PE) one each in 3rd to 6th sem & 02 Open electives (OE) one each in 5th and 6th sem and 02 MOOCs, two each in 3th and 4th sem (of 3 credits each is offered to the students, 30 out of 160 credits in the entire course have been achieved. In addition the students will be encouraged to achieve the target of 24 credits by taking additional MOOC in every semester for pursuing higher studies in the chosen field as envisioned by UGC and considered sufficient to pursue higher education in any particular domain.

Students are given more flexibility by choosing Elective courses of their choice from the following tracks (Table-1):

- Arch Allied
- Design/Arts Allied
- Energy/Environment
- Planning
- Building Science, Applied Engineering, Building Services and Technology
- Various Building Typology

About Open Electives: There shall be flexibility for students to study the subjects/courses of their choice by combining unique combinations which may be inter disciplinary/intra disciplinary. Broad areas defined for open electives are (Table-3):

- Performing Arts
- Journalism/Mass Communication
- Health & Happiness/ Entrepreneurship
- Technology/ Management
- Social Sciences
- Languages

About MOOC courses

A total of 10 MOOC courses with 03 credit each are being offered as per UGC notification July 2016 / IKGPTU guidelines March 2020. Curriculum is designed in such a way the students are given complete flexibility to opt for stream of their choice from available MOOC courses on Swayam portal or elsewhere and they may earn up to maximum of 30 credits by the end of the program by choosing courses from single/multiple tracks. This can help the students to diversify and explore in their field of choice for higher learning, The students will be encouraged to take up additional MOOCs of 03 credits each during the course so as to earn the targeted minimum 24 credits

as this limit (24 credits) are deemed sufficient to satisfy a requirement for admission to any Masters Course as per UGC guidelines.

The broad areas defined are as per following:

- Allied Architecture/Design / Arts
- Energy/Environment
- Planning
- Building Science & Applied Engineering / Building Services / Building Technology
- Computer Science/ Programming/ Data Sciences/ Software's/ Interruptive Technologies such as Artificial Intelligence (AI) , Machine Learning (ML) and Cloud computing (CC) etc
- Management/ Business/ Entrepreneurship
- Humanities/Social Sciences/Education/ Teaching
- Journalism/Mass Communication / Media
- Finance/Commerce/Economics Accounts
- Legal Services/Administration/ Personal Development / Health & Happiness / Gaming/Miscellaneous

Table; showing the skeleton of the B.Sc (AB) of PC, BS & AE, PAEC, SEC, PE, OE and their respective credits

Semester	PC/ (Credits)	BS & AE/ (Credits)	PAEC/ (Credits)	SEC/(Credits)	DSE/ PE (Credits)	GE/ OE (Credits)	G. Total (Credits)
1st	PC- 1/ (5)	BS & AE-1/ (4)	---	SEC- 1/ (1)			
	PC -2/ (4)			SEC -2/ (2)			
	PC -3/ (3)	BS & AE-2/ (3)		SEC -3/ (1)			
				SEC- 4/ (2)			
2nd	PC- 4/ (5)	BS & AE-3/ (4)	PAEC-1/ (3)	SEC- 5/ (1)			
	PC- 5/ (4)						
	PC- 6/ (3)	BS & AE-4/ (3)		SEC- 6/ (3)			
3rd	PC -7/ (5)	BS & AE- 5/ (4)	PAEC -2/ (3)	SEC -7/ (3)	PE-1/ (3)		
	PC-8/ (3)	BS & AE- 6/ (3)	MOOC-1/ (3)	SEC- 8/ (1)	MOOC-2/ (3)		
		BS & AE 7/ (3)					
4th	PC -9/ (5)	BS & AE -8/ (4)	PAEC -3/ (3)	SEC -9/ (3)	PE-2/ (3)		
		BS & AE -9/ (3)	PAEC -4/ (3)		MOOC-4/ (3)		
		BS & AE -10/ (3)	MOOC-3/ (3)				
5th	PC -10/ (5)	BS & AE- 11/ (4)	PAEC- 5/ (3)	SEC -10/ (1)	PE -1/ (3)	OE -1/ (3)	
		BS & AE- 12/ (3)	PAEC -6/ (3)		MOOC-6/ (3)	MOOC-7/ (3)	
		BS & AE -13/ (3)	MOOC-5/ (3)				
6th	PC -11/ (5)	BS & AE- 14/ (4)		SEC -11/ (2)	PE- 2/ (3)	OE- 2/ (3)	
	PC -12/ (3)	BS & AE-15/ (3)		MOOC-8/ (3)	MOOC-9/ (3)	MOOC-10/ (3)	
		BS & AE -16/ (3)					
Total BSc AB courses/credits	12/ (50)	16/ (54)	6/ (18)	11/ (20)	4/ (12)	2/ (6)	51/ (160)

CHOICES AVAILABLE

The students after pursuing B.Sc (AB) have numerous options, few of them are:

a) Join Design Stream, Pursue Masters in design and become product/ graphic/ industrial designer.
b) Pursue Masters in Interior design or Urban design and landscape designer.
c) Specialize in Planning stream/ building science stream or building services stream

d) Diversify to become a social scientist. Pursue Masters Degree in History, Sociology, and Psychology, Philosophy or Rural studies. Any combination to crack the prestigious competitive examination. Or they can choose to become an author/ be an architectural historian.
e) Be a Journalist/ media professional by choosing the mass communication stream.
f) Get absorb in Tourism and Travel Industry, which thrives on knowing the past / heritage. Act as tour manager or travel guide, and the hospitality sector as an expert in built heritage.
g) Enter the domain of management profession after pursuing MBA
    (1) Specialize in finance- enter huge banking and insurance sector.
    (2) Specialize in HR- manage the human resource of construction related Companies
h) Person with creative bent of mind will be able to pursue higher education in fine arts/ performing arts/ visual arts or applied arts.
i) Be a web designer/ gaming designer or join animation industry.
j) Post globalisation legal issues arising in the building industry have increased many folds. One can join law/ legal services.
k) Be a Surveyor/ Valuer/ Arbitrator/ Property consultant/ Real Estate Developer
l) Become a environmentalist.
m) Enter the domain of research and be a building scientist/ researcher.
n) Various disruptive technologies like Artificial Intelligence (AI), Machine Learning (ML), Nano Science (NS), Cloud Computing (CC), and Data Science have lot to offer.
o) Be proud to join Indian Army, Administrative services or simply politics.

Programme Specific Objectives: Keeping in view MHRD and CoA guidelines Program objectives are been framed**.** These objectives are aimed at integrating knowledge based and skill based pedagogies which is essential to make the students responsive and sensitive Professionals and lead to the holistic development of students

By the end of programme the student shall be able to:

- Take & thoroughly execute client's instructions and prepare design briefs & feasibility reports.
- Evaluate every site, analyse the impact of existing and any proposed development on its immediate environs & prepare environment impact assessment reports
- Propose architectural design of any building project in totality, i.e. fulfil its stated function, suggest most appropriate structure system & make it appealing in the given budget in a most sustainable manner, appropriate for the given climate.
- Prepare the proposal for the overall development of site.
- Tackle issues related to Public Health & Building services efficiently.
- The proposal so prepared should be in line with Building Regulations applicable to the site/area.
- In addition to the above the students will be able to propose: Interior design, landscape design, Graphic & signage design etc.

To achieve the above stated objectives of the 03 years course of B.Sc Arch basics, target to achieve is also divided in the following 03 stages:

PO1 – (First Year):

- To train the students to understand the Principles & Elements of design and to handle basic single/double space designs solutions and prepare its drawings using fundamental construction techniques.
- He should be able to prepare the presentation drawings with model and communicate it well with the client.

Expected Outcome:

The students will be able to understand the Principles & Elements of design and will be able to prepare drawings using fundamental construction techniques. Students shall be able to communicate and present their work satisfactorily.

PO2 – (Second Year)

- To train the students to handle projects of medium complexity having fixed requirements with maximum two floors. So that he/she understand the concept of vertical circulation and can work out fundamental Building Services and issues of public health, as well.
- This will be able to suggest improvement/ additions in Rural setups.
- He/she should be able to prepare the drawings using computers basic 2d software's
- Able to understand the Importance of climatology along with surveying and levelling so that proposals are climate responsive and appropriate sited.
- The understanding of various Architecture Theories and knowledge of history of architecture is enhanced for better design outputs.
- Prepare measure /drawing documentation
- Understand the trends of Indian Traditional/Indigenous/Rural Architecture

Expected Outcome

- The student will learn to handle small projects with fixed requirements. They shall be able to prepare drawings using 2D software's. They shall develop understanding of Climatology, Survey, and Architectural Theories.

PO3 – (Third Year)

- To equip the student with the design skills to handle more than two floor (walk up buildings) with complex building requirements & site needs addressing the environment protection, fire safety and earthquake resistances and other Codal provisions as per NBC and local building byelaws/regulations.
- At this stage students will be able to design buildings needed/required by the middle income group of the Indian society.
- He/ She will be able to design the basic bulk active structure and prepare structural drawings along with specification writing and cost estimates.
- Prepare municipality drawings.
- Understand the trends of world architecture

Expected Outcome

- The students will be able to handle complex projects of more than two floors with all amenities. They shall be able to prepare complete set of working, Structural, Public health drawings along with specifications and estimates and schedules.

SEMESTER WISE COURSE STRUCTURE:

FIRST YEAR

1st SEMESTER

Course Type	S. No	Course Code	Course Title	Load Allocations					Marks %	Credits	Duration of Univ. Exam/ Viva-Voce
				L	Sem / Tut	P/ FW	Stu	Total	Int : Ext		
PC	1	UC/BSCAB-101/20	Architectural Design & Theory-I	1	-	-	4	05	60:40	5	06 + Ext. Viva Voce
	2	UC/BSCAB-102/20	Architectural Drawing-I	1	-	-	3	04	60:40	4	03
	3	UC/BSCAB-103/20	Architectural Graphics-I	1	-	-	2	03	60:40	3	03
BS & AE	4	UC/BSCAB-104/20	Building Construction & Materials-I	1	-	-	3	04	60:40	4	03
	5	UC/BSCAB-105/20	Structure Systems	3	-	-	-	03	60:40	3	No Exam, only Ext. jury Viva-Voce
	6	UC/BSCAB-106/20	Workshop-I	-	-	2	-	02	60:40	1	No Exam, only Int. jury Viva-Voce
	7	UC/BTHU-101/18	Communicative English	2	-	-	-	02	40:60	2	03
	8	UC/BTHU-102/18	Communicative Skill Laboratory		-	2	-	02	60:40	1	No Exam, only Ext. jury Viva-Voce
SEC	9	UC/BSCAB-107/20	Human Values and Professional Ethics	1	2	-	-	03	40:60	2	03
	10	UC/BSCAB-108/20	Life skills-I	1	-	-	-	01	S/US	NC	No Exam
			Total					29		25	

2nd SEMESTER

Course Type	S. No	Course Code	Course Title	Load Allocations					Marks %	Credits	Duration of Univ. Exam/ Viva-Voce
				L	Sem / Tut	P/ FW	Stu	Total	Int : Ext		
PC	1	UC/BSCAB-201/20	Architectural Design -II	1	-	-	4	05	60:40	5	06 + Ext. Viva Voce
	2	UC/BSCAB-202/20	Architectural Drawing-II	1	-	-	3	04	60:40	4	03
	3	UC/BSCAB-203/20	Architectural Graphics-II	1	-	-	2	03	60:40	3	03
BS & AE	4	UC/BSCAB-204/20	Building Construction & Materials-II	1	-		3	04	60:40	4	03
	5	UC/BSCAB-205/20	Theory of Structure- I	2	2	-	-	04	40:60	3	03
PAEC	6	UC/BSCAB-206/20	Theory of Design- I	3	-	-	-	03	40:60	3	03
	7	UC/BSCAB-207/20	Workshop-II	-	-	2	-	02	60:40	1	No Exam, only Int. jury Viva-Voce
	8	UC/BSCAB-208/20	Environmental Science	3	-	-	-	03	40:60	3	03
SEC	9	UC/BSCAB-209/20	Mentoring & Professional Development- I	-	-	2	-	02	S/US	NC	No Exam
	10	----	*Educational Tour I/ Summer Vocational Training-I/ Vacation Assignment-I	-	-	-	-	-	-	-	Evaluation will be done in 3rd sem
			Total					30		26	

*NOTE: Educational Tour of 1-2 week duration during or after the first year of studies must be undertaken and Summer Training/ Vacation assignment to be given based on UC/BSCAB-209/20. The marking of the same will done in the third semester UC/BSCAB-309/20

SECOND YEAR

3rd SEMESTER

Course Type	S. No	Course Code	Course Title	Load Allocations					Marks %	Credits	Duration of Univ. Exam/ Viva-Voce
				L	Sem / Tut	P/ FW	Stu	Total	Int : Ext		
PC	1	UC/BSCAB-301/20	Architectural Design -III	1	-	-	4	05	60:40	5	06 + Ext. Viva Voce
BS & AE	2	UC/BSCAB-302/20	Building Construction & Materials-III	1	-	-	3	04	60:40	4	03
	3	UC/BSCAB-303/20	Structure Design-I	2	2	-	-	04	40:60	3	03
	4	UC/BSCAB-304/20	Surveying & Leveling-I	2	-	2	-	04	40:60	3	03
PAEC	5	UC/BSCAB-305/20	Theory of Design- II	3	-	-	-	03	40:60	3	03
		UC/BSCAB/MOOC-306 (-)/20	MOOC-I (Ref Table ____)	-	-	-	-	-	-		Certificate from imparting agency
SEC	6	UC/BSCAB-307/20	Computer Application-I	2	-	2	-	04	60:40	3	No Exam, only Ext. jury Viva-Voce
	7	UC/BSCAB-308/20	Life skills-II	1	-	-	-	01	-	NC	No Exam
	8	*UC/BSCAB-309/20	* Educational Tour I/ Summer Vocational Training-I / Vacation Assignment-I	-	-	-	-	-	100	2	No Exam, only Int. jury Viva-Voce
PE	9	UC/BSCAB/PE -310(-)/20	Professional Elective-I (Ref Table -----)	3	-	-	-	03	40:60	3	03
		UC/BSCAB/PE/MOOC -311(-)/20	MOOC-II (Ref Table-___)	-	-	-	-	-	-		Certificate from imparting agency
Total								28	-	26	

NOTE: * UC/BSCAB-309/20 is carried out in the intervening period of 2nd and 3rd semester, the evaluation of report/s to be done in the 3rd semester.

Course Type	S. No	Course Code	Course Title	Load Allocations					Marks %	Credits	Duration of Univ. Exam/ Viva-Voce
				L	Sem / Tut	P/ FW	Stu	Total	Int : Ext		
PC	1	UC/BSCAB-401/20	Architectural Design –IV	1	-	-	4	05	60:40	5	06 + Ext. Viva Voce
BS & AE	2	UC/BSCAB-402/20	Building Construction & Materials-IV	1	-	-	3	04	60:40	4	03
	3	UC/BSCAB-403/20	Structure Design-II	2	2	-	-	04	40:60	3	03
	4	UC/BSCAB-404/20	Building Services-I	3	-	-	-	03	40:60	3	03
PAEC	5	UC/BSCAB-405/20	History of Architecture-I	3	-	-	-	03	40:60	3	03
		UC/BSCAB/MOOC-406 (-)/20	MOOC-III (Ref Table ____)	-	-	-	-	-	-		Certificate from imparting agency
	6	UC/BSCAB-407/20	Climate & Architecture-I	3	-	-	-	03	40:60	3	03
SEC	7	UC/BSCAB-408/20	Computer Application-II	2	-	2	-	04	100	3	No Exam only Ext. jury Viva-Voce
	8	UC/BSCAB-409/20	Mentoring and Professional Development-II	-	-	2	-	02	100	NC	No Exam
	9	---	*Education Tour II / Summer Vocational Training II /Vacation Assignment II	-	-	-	-	-	_	_	The evaluation will be done in 5th sem
PE	10	UC/BSCAB/PE/-410(-)/20	Professional Elective-II(Ref Table -----)	3	-	-	-	03	40:60	3	03
		UC/BSCAB/MOOC -411-420/20	MOOC-IV (Ref Table-___)	-	-	-	-	-	-		Certificate from imparting agency
Total								31		27	

4TH SEMESTER

*NOTE: Educational Tour of 1-2 week duration during or after the IInd year of studies (as a Measure drawing /Documentation Camp) should be undertaken and Summer Training/ Vacation assignment to be given based on UC/BSCAB-409/20. The marking of the same will done in the fifth semester UC/BSCAB-508/20

THIRD YEAR

5TH SEMESTER

Course Type	S. No	Course Code	Course Title	Load Allocations					Marks %	Credits	Duration of Univ. Exam/ Viva-Voce
				L	Sem / Tut	P/ FW	Stu	Total	Int : Ext		
PC	1	UC/BSCAB-501/20	Architectural Design –V (Research methods and dissertation-1)	1	-	-	4	05	60:40	5	03 hrs for RM + int. jury Viva Voce of dissertation
BS & AE	2	UC/BSCAB-502/20	Building Construction & Materials-V	1	-	-	3	04	60:40	4	03
	3	UC/BSCAB-503/20	Structure Design-III	2	2	-	-	04	40:60	3	03
	4	UC/BSCAB-504/20	Building Services-II	3	-	-	-	03	40:60	3	03
PAEC	5	UC/BSCAB-505/20	History of Architecture-II	3	-	-	-	03	40:60	3	03
	any one	UC/BSCAB- MOOC-506(-) /20	MOOC-V (Ref Table ____)	-	-	-	-	-	-		Certificate from imparting agency
	6	UC/BSCAB-507/20	Climate & Architecture(Sustainable Design) -II	3	-	-	-	03	40:60	3	03
SEC	7	UC/BSCAB-508/20	Life skills-III	1	-	-	-	01	-	NC	No Exam
	8	UC/BSCAB-509/20	*Educational Tour II/ Summer Vocational Training-II/Vacation Assignment-II	-	-	-	-	-	100	2	Int. jury Viva-Voce
PE (choose one)	9	UC/BSCAB-PE-510(-)/20	Professional Elective- III (Ref Table-_)	3	-	-	-	03	40:60	3	03 (Question Bank)
		UC/BSCAB-MOOC -511(-)/20	MOOC-VI (Ref Table-_)	-	-	-	-	-	-		Certificate from imparting agency
OE (choose one)	10	UC/BSCAB/OE-512(-)/20	Open Elective- I (Ref Table-_)	3	-	-	-	03	40:60	3	03 (Question Bank)
		UC/BSCAB/MOOC-513(-)/20	MOOC-VII (Ref Table-_)	-	-	-	-	-	-		Certificate from imparting agency
Total								29		29	

Note: * UC/BSCAB-50__/20 is carried out in the intervening period of 4th and 5th semester, the evaluation of report/s to be done in the 5th semester.

6TH SEMESTER

Course Type	S. No	Course Code	Course Title	Load Allocations					Marks %	Credits	Duration of Univ. Exam/ Viva-Voce
				L	Sem / Tut	P/ FW	Stu	Total	Int : Ext		
PC	1	UC/BSCAB-601/20	Architectural Design (Major Project) -VI	1	-	-	4	05	60:40	5	12 (in 2 days) + Ext. Viva Voce
	2	UC/BSCAB-602/20	Architecture Legislation -I	2	2	-	-	04	40:60	3	03
BS & AE	3	UC/BSCAB-603/20	Building Construction & Materials-VI	1	-	-	3	04	60:40	4	03
	4	UC/BSCAB-604/20	Structure Design (Project) -IV	2	2	-	-	04	60:40	3	03
	5	UC/BSCAB-605/20	Estimating Costing & Specifications-I	2	2	-	-	04	40:60	3	03
SEC	6	UC/BSCAB-606/20	Constitutional Law/Indian Traditional knowledge	2	-	-	-	02	40:60	2	03
		UC/BSCAB-MOOC 607/20	MOOC- VIII(Ref Table ____)	-	-	-	-	-	-		Certificate from imparting agency
	7	UC/BSCAB-607/20	Mentoring and Professional Development-III	2	-	-	-	02	100	NC	No Exam
PE (Choose one)	9	UC/BSCAB/PE-610-615/20	Professional Elective- IV (Ref Table-___)	3	-	-	-	03	40:60	3	03 (Question Bank)
		UC/BSCAB/MOOC/PE -621-630/20	MOOC-IX (Ref Table-___)	-	-	-	-	-	-		Certificate from imparting agency
OE (Choose one)	10	UC/BSCAB/OE-616-620/20	Open Elective- II (Ref Table-4)	3	-	-	-	03	40:60	3	03 (Question Bank)
		UC/BSCAB/MOOC/OE-631-640/20	MOOC-X (Ref Table-___)	-	-	-	-	-	-		Certificate from imparting agency
Total								31		26	

Table-1 (Abbreviation Used)

Abbreviation Used in the teaching scheme			
PC	Professional Core	L	Lecture
BS & AE	Building Science & Applied Engineering	Sem/Tut	Seminar/ Tutorial
PAEC	Professional Ability Enhancement Compulsory	P/FW	Practical/ Field Work
SEC	Skill Enhancement Courses	Stu	Studio
PE	Professional Electives	Int.	Internal
OE	Open Elective	Ext.	External
MOOC	Massive Open Online Courses	S/US	Satisfactory/Un-Satisfactory
BS/BT	Building Services/ Building Technology	NC	Non Credit

Table-1 Semester/Year-wise credits

	BSc . Arch Basics	
Sem.	**Credits**	Year wise
I.	**25**	51
II.	**26**	
III.	**26**	53
IV.	**27**	
V.	**29**	56
VI.	**27**	
Total	**160**	160

Table no-3 Codes assigned to Professional Electives (Stream/Track wise) BSc Architecture Basics (BSc AB).

Track	Stream/ core area	3rd sem UC/BScAB-PE	4th sem UC/BScAB- PE	5th sem UC/BScAB-PE	6th sem UC/BScAB-PE
		PE-I	PE-II	PE-III	PE-IV
T1	Allied Arch	Hill Architecture	Traditional Indian Architecture		
	Code				
T2	Allied Design/ Arts	Interior Design	Landscape Design		
	Code				
T3	Energy/ Environment	Ecology	Green Buildings & Rating Systems		
	Code				
T4	Planning	Principles of Human Settlement	Smart Cities/ Real Estate development		
	Code				
T5	BS & AE/BS/BT	Building Industry/ Building Economics	GIS/Remote Sensing/ Geo Spatial Technologies		
	Code				
T6	Building Typology	Design for Containment	Design for Animals & Plants		
	Code				

Table no-4 Codes assigned to Open Electives (Track wise) BSc Architecture Basics (BSc AB).

S. No	Track	Stream	5 th sem UC/BSCAB/ OE/----	6 th sem UC/BSCAB/ OE/----
			OE-I	OE-II
1	T1	Performing Arts	Music	Dance
		Code		
2	T2	Journalism/ mass communication	Creative Writing – I	Creative Writing – II
		Code		
3	T3	Health & Happiness/ Entrepreneurship	Health Education – I	Health Education – II
		Code		
4	T4	Technology/ Management	Laser Technology & Architecture	Printing Tech. & Arch.
		Code		
5	T5	Social Sciences	Sociology VS Architecture	Psychology VS Architecture
		Code		

Table no-5 Codes assigned to MOOC's (Stream/Track wise) BSc Architecture Basics (BSc AB).

S.no	Track	MOOC
1	T1	Allied Architecture/Design / Arts
2	T2	Energy/Environment
3	T3	Planning
4	T4	Building Science & Applied Engineering / Building Services / Building Technology
5	T5	Computer Science/ Programming/ Data Sciences/ Software's/ Interruptive Technologies
6	T6	Management/ Business/ Entrepreneurship
7	T7	Humanities/Social Sciences/Education/ Teaching
8	T8	Journalism/Mass Communication / Media
9	T9	Finance/Commerce/Economics Accounts
10	T10	Legal Services/Administration/ Personal Development / Health & Happiness / Miscellaneous

Syllabus of

Bachelors of Science (Architecture Basics)

(1st Semester)

Batch 2020 onwards

By

Department of Architecture

IK Gujral Punjab Technical University

IK Gujral Punjab Technical University

Bachelor of Science (Architecture Basics - 1st Semester)

Course Code	Course Name	1L, 4 Stu	Int. : Ext.	Duration of Exam
UC/BSCAB-101/20	**Architectural Design & Theory – 1**	**Credits - 05**	**60:40**	**06 + Ext. Viva Voce**

Course Objective:

The main objective of the course is to get the students interested in and to familiarize them with the basic concepts of Design. To enhance and promote visualization, expressional skills and sensitivity to surrounding environment and to develop the ability to translate principle of design into architecture solution.

Course Outcomes:

At the end of the course, the students will able to-

- Understand & will gain a fundamental knowledge of architecture design and its basic principles.
- To apply visual and formal analysis of architecture in their mind and they will be able to appreciate well-designed buildings.
- Understand the skill required to interpret a work of architecture and to evaluate, identify and analyse artistic expression of architectural forms.
- Understand the relationship between human activities of Space.

Detailed Syllabus:

UNIT-I (Theory)

- Introduction to Basic Design
- Objectives of Design
- Elements of Design
- Principles of Design
- Scale and proportion in Architecture.
- Anthropometrics (including norms for physically challenged persons)
- Human functions and their interactions for space requirements.
- Minimum and optimum areas for various human activities & functions.

UNIT-II (Design Exercise & Application)

- 2D compositions with basic geometric shapes, colour, texture and pattern.
- Floor tile design, carpet, mural, door paving patterns, Sky line of city/village
- Experience in 3D Design, compositions with simple forms like cube, cuboids, cylinder, cone, prism etc.
- Compositions with 3-D Solids.
  Note - Stress is given to 2D, 3D exercise**(Black & white and colours.)**
- Functional furniture layout, circulation as anthropometric/Activity pattern

Evaluation Criteria for Exam / Question Paper Setting:

The examiner will set five questions from Unit- I and two from Unit-III& students are required to attempt any three question from Unit-I and only one from Unit-III during the six hour examination. No question to be set from Unit- II

Important Note:

The evaluation is to be done through Viva - voce conducted at the institute level by Internal / External jury members appointed in consultation with the university from the appointed panel list of examiners. The answer sheet shall be retained at the institute after the exam for the jury viva voce.

Instructions for the Faculty:

Design faculty should encourage and motivate the students for live projects of their immediate surrounding. (Identifying need, Framing requirements and solution for the same and it should be marked as an assignment.) The stress should be given on making students grasp the concept and do the design assignment as a creative fun activity.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same In the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University

Bachelor of Science (Architecture Basics - 1st Semester)

Course Code	Course Name	L - 1, ST - 3	Int. : Ext.	Duration of Exam
UC/BSCAB-102/20	**Architectural Drawing –I**	**Credits - 04**	**60:40**	**03 Hours**

Course Objective:

The objective is to make the students familiarize with good drafting and lettering techniques use in architecture. To gain the basic knowledge for preparing the architectural drawings by learning about the orthographic projections of simple geometric forms and representation of 3-D & 2-D forms.

Course Outcomes:

At the end of the course, the students will able to –

- Gain the comprehensive understanding of the fundamental techniques of technical drawing and its architectural representation.
- Attain the knowledge to visualize the geometrical forms through plans, elevations and sections.

Detailed Syllabus:

UNIT- I

- Drafting – Technique & its Principles
- Line - Types of Lines and Dimensioning of line
- Lettering - free hand & block lettering
- Scales – Different types of scales and its uses in the Architectural Drawing.

UNIT- II

- Orthographic Projections - Point, Lines, Plane and Solid in various positions in the First Quadrant.

UNIT- III

- Section of Solids- Cube, Cuboids, Cone, Cylinder, Pyramid, Prism etc.

UNIT- IV

- Development of Surfaces - Simple Geometrical Solids (Cube, Cuboids, Cone, Cylinder, Pyramid, Prism etc.)
- Interpenetration of Solids

Instructions for the Faculty:

Emphasis should be laid on learning by doing and students have to be encouraged to make proper models to understand the geometry of forms.

Evaluation Criteria for Exam / Question Paper Setting:

Total eight questions are to be set (two questions from each unit) and the students are required to attempt total four questions (one from each unit).

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same In the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University

Bachelor of Science (Architecture Basics - 1st Semester)

Course Code	Course Name	L - 1, ST - 2	Int. : Ext.	Duration of Exam

UC/BSCAB-103/20	Architectural Graphics –I	Credits - 03	60:40	03 Hours

Course Objective:

The objective is to make the students familiar with visual arts and its basic principles and to explore the potential of Pencil of different grades and Coloured pencils as a powerful tool of Graphic Communication.

Course Outcomes:

At the end of the course, the students will able to –

- Gain a fundamental knowledge of architecture Graphics and its principles.
- Achieved a comprehensive understanding of architectural presentation techniques.

Detailed Syllabus:

UNIT- I (Pencil as fundamental tool of drawing)

- Free hand line-work with different strokes/grades in pencil.
- Effect of light and shade on simple geometrical solids.
- Textures of different building materials (such as bricks, stones, grass, glass, timber etc.) in pencil through shading and surface finishes of wall and floor.
- B/W Composition by using different geometric forms with charcoal pencil.

UNIT- II (Pencil as presentation medium)

- Freehand (proportionate) sketching of human figures, different types of vegetation, different transport modes and buildings etc.
- Indoor and outdoor furniture/antique items & Staircase-shading/role with light
- Sketches of scenes and activities from memory involving public spaces, markets, festivals, recreational spaces etc.
- Live sketching – indoor and outdoor area

UNIT-III (Rendering with coloured pencils/crayons/dry pastels)

- Colour rendering of human figures, different types of vegetation, different transport modes and buildings etc.
- Colour Rendering of various scenes such as Garden/Park Scene, Street Scene, Lake Scene, Village/Market Scene, etc.
- Live sketching – indoor and outdoor area
- Role of light in rendering co-relation with different shapes of geometry and some building elements.

UNIT-IV (Art & Illusion)

- Different exercises involving Logo Design, Collage making etc.
- Mural and Sculpture design in different materials like PoP, Clay, ceramic/Mosaic etc.

Instructions for the Faculty:

- Workshops related to pencil rendering will also be organised, highlighting its technique and style which can be organised indoor or outdoor. The students must be encouraged to appreciate the natural/man-made landscape and to understand the interrelationship of nature and architecture.

Evaluation Criteria for Exam / Question Paper Setting:

Total four questions are to be 01 from each the units and students are required to attempt all the questions.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same In the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University

Bachelor of Science (Architecture Basics - 1st Semester)

Course Code	Course Name	L - 1, ST - 3	Int. : Ext.	Duration of Exam
UC/BSCAB-104/20	**Building Construction & Materials - I**	**Credits - 04**	**60:40**	**03 Hours**

Course Objective:

- The objective is to introduce the elementary building materials and their applications. To familiarize students with construction details of various components of construction.

Course Outcomes:

At the end of the course, the students will able to –

- Understand the properties, types, uses and application of various building materials i.e. brick, lime, cement, mortar, sand, stones etc.
- Gain the fundamental knowledge of building Construction especially in brick and stone.

Detailed Syllabus (This subject consists of two Parts)

Part A: Building Materials

UNIT-I (Brick and Mortar)

- Brief introduction to mud, sand, clay, shurkhi, aggregates, lime and cement etc.
- Different types of mortar like mud mortar, lime mortar, cement mortar etc.- their properties and uses
- Manufacturing process, Classification &types, uses, sizes and properties of bricks
- Cost-effective bricks, AAC blocks, Fly-ash bricks etc. – their properties and uses in construction industry.

UNIT-II (Stone)

- Classification &types, uses, sizes and properties of Stone available in India
- Stone – quarrying process, its dressing, and deterioration and preservation measures.
- Application properties and visual check for different types of stone.
- Properties and uses of artificial stone.

Part B: Building Construction

UNIT-III (Brick masonry)

- Introduction to various components of a building (sub-structure to super-structure), their structural and functional roles.
- Brick masonry –different types of bonds (English, Flemish, Rat trap, etc.) and junctions (L-junctions, T-Junctions, cross junction) of varying wall thickness (not more that 2 brick thick).
- Attached and detached brick Piers of varying thickness (not more than 3'-0")
- Brick jalli-design and construction details

UNIT-IV (Stone masonry)

- Stone masonry of various types
- Lintels and sill level details
- Coping and threshold details.

- Arches-Flat, Segmental and Semi-circular

Instructions for the Faculty:

- The assigned Faculty is advised to undertake 2-3 site visits for better understanding of Brick/Stone bonds, Brick jalli and different types of exterior finishes

Evaluation Criteria for Exam / Question Paper Setting:

Total eight questions are to be set two from each unit & students are required to attempt total four questions i.e. one from each unit. The distribution of marks for **Part A** (Unit I&II): **Part B** (Unit III&IV) is 12: 28 marks.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same In the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University

Bachelor of Science (Architecture Basics - 1st Semester)

Course Code	Course Name	L-3	Int. : Ext.	Duration of Exam

UC/BSCAB-105/20	Structure Systems - I	Credits - 03	60:40	No exam only External viva-voce

Course Objective:

To inculcate in the student an awareness of basic structural principles in structural system ,with emphasis on learning by doing and making 3-D models to provide the student with different spatial experience. To make them understand the concept behind every structural form.

Course Outcomes:

At the end of the course, the students will able to – Understand the needs, requirements, and selection for various types of structures, the architectural features and necessity of choosing the correct structure system, comprehend the design principles and applications of different structural systems.

Detailed Syllabus

UNIT-I (CELLULAR SYSTEM)

Cellular System; Cell as a natural unit of space, Cell transformation, Polygonal Cellular Systems leading to evolution of Geodesic Domes, Applications of Cellular System in Building case studies

Bulk Active Structure System; Slabs (One way & Two way),Beams (Simply supported, Cantilever, Continuous, Vierendeel Girders), etc, Grid (Skew & Square Grid),Columns (short & long), Applications of Bulk active systems in buildings case studies.

UNIT-II Vector-active structure system: Space frames, Trusses (Timber & Steel).,Domes (Ribbed & Geodesic) Structure acting mainly through axis: Lattice structure, Polyhedron structure, Tree type. Applications of vector active structural systems in buildings, advantages & disadvantages if any, case studies.

UNIT-III **UNIT –III**

Form Active Structural System Cable Structures (Roofs, Bridges etc.),Tents Structures, Pneumatic Structure. Applications of form active systems in buildings case studies.
Surface active Structure System: Shells, Folded Plates, etc.

UNIT-I **UNIT-IV**

Structure System for High Rise Buildings, case studies.

Evaluation Criteria for Exam / Question Paper Setting:

Evaluation of students shall be done by an Internal Jury constituted by the Director/ Principal of the Institute based on the Viva- voce and the work done by the students

Instructions for the Faculty:

- Emphasis shall be laid on learning by doing by making of 3-D models to give the students an idea of different spatial experience.
- The teaching in this subject must bring out:
  (i) The predominantly pictorial nature of the Architects' language.

(ii) The physical - mechanical essence of the Subject matter.
(iii) The orientation of all Architectural efforts to Form and Space.

- Stress should be laid on understanding the force distribution and principle of equilibrium. Case studies of structure done by renowned Architects/ Engineers be made an integral part of learning.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same In the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

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IK Gujral Punjab Technical University

Bachelor of Science (Architecture Basics - 1st Semester)

Course Code	Course Name	P - 2	Int. : Ext.	Duration of Exam
UC/BSCAB-106/20	Workshop – I	Credits - 01	60:40	No exam only Internal viva-voce

Course Objective:

The student will gain basic hands on experience and fundamental knowledge in carpentry, brick masonry and model making.

Course Outcomes:

At the end of the course, the students will able to –

- Gain the basics knowledge of the carpentry tools, its joints and brick laying bonds
- Attain skill to work with different materials for making architectural model.

Detailed Syllabus:

UNIT-I

- Carpentry – Introduction to the types, use of carpentry Tools and various joints in Carpentry.
- Brick/Stone Masonry – Low height wall construction by using either bricks or stones for the understanding of various bonds, jallies etc.

UNIT-II

- Model Making—making of different types of trees and other landscape elements like street lamps, pathways, plantation, water-bodies and different types of automobiles.
- Preparation of wooden base for modelmaking.

Instructions for the Faculty:

- The Faculty is required to give a complete demonstration of brick work, stone work, textured & timber work and other exterior finishes through audio-visual aids, to be presented to the students.
- The Faculty is advised to take the students for site visits and the work of wall construction shall be attempted in groups.

Evaluation Criteria for Exam / Question Paper Setting:

In the end of the semester internal jury Viva-voce to be conducted (the jury comprises of the subject incharge and the HoD nominee)

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same In the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University

Bachelor of Science (Architecture Basics - 1st Semester)

Course Code	Course Name	2 - L	Int. : Ext.	Duration of Exam
UC-BTHU101-18	**Communicative English**	**Credit - 2**	**60:40**	**03 Hours**

Course Objective:

The student will gain basic hands on experience and fundamental knowledge English and become the independent users of English Language.

Course Outcomes:

At the end of the course, the students will able to –

- Have proficiency in reading & listening, comprehension, writing and speaking skills.

- Understand spoken and written English language, particularly the language of their chosen technical field.
- Converse fluently.
- Produce clear and coherent texts on their own.

Detailed Syllabus:

UNIT-I Vocabulary Building & Basic Writing Skills

- The concept of Word Formation
- Root words from foreign languages and their use in English
- Acquaintance with prefixes and suffixes from foreign languages in English to
- form derivatives.
- Synonyms, antonyms, and standard abbreviations.
- Sentence Structures
- Use of phrases and clauses in sentences
- Importance of proper punctuation
- Creating coherence
- Organizing principles of paragraphs in documents
- Techniques for writing precisely

UNIT-II Identifying Common Errors in Writing

- Subject-verb agreement
- Noun-pronoun agreement
- Misplaced modifiers
- Articles
- Prepositions
- Redundancies
- Clichés

UNIT-III Mechanics of Writing

- Writing introduction and conclusion
- Describing
- Defining
- Classifying
- Providing examples or evidence

UNIT-IV Writing Practices

- Comprehension
- Précis Writing
- Essay Writing
- Business Writing-Business letters, Business Emails, Report Writing, Resume/CV

Evaluation Criteria for Exam Question Paper Setting:

The examiner is required to set eight questions with minimum two from each unit. Students are required to attempt five questions with minimum one from each unit.

Core References:

The assigned Faculty is required to provide updated references/E-resources related to the content of the subject by ensuring the availability of the same In the department library, on web portals/online i.e. E-learning. The Faculty is also advised to keep on updating the reference list and submit the latest one in the Library & Academic department of the Campus.

IK Gujral Punjab Technical University

Bachelor of Science (Architecture Basics - 1st Semester)

Course Code	Course Name	2P	Int : Ext	Duration of Exam
UC-BTHU102-18	**Communicative Skill Laboratory**	**Credit - 1**	**60:40**	**Viva- Voce**

Course Objective:

The objective of the course is to help the students become the independent users of English language.

Course Outcomes:

At the end of the course, the students will able to –

- Students will acquire basic proficiency in listening and speaking skills.
- Students will be able to understand spoken English language, particularly the language of their chosen technical field.
- They will be able to converse fluently
- They will be able to produce on their own clear and coherent texts.

Detailed Syllabus:

Interactive practice sessions in Language Lab on Oral Communication:

- Listening Comprehension
- Self-Introduction, Group Discussion and Role Play
- Common Everyday Situations: Conversations and Dialogues
- Communication at Workplace
- Interviews
- Formal Presentations

Core References:

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IK Gujral Punjab Technical University

Bachelor of Science (Architecture Basics - 1st Semester)

Course Code	Course Name	1– L, 2 Tut	Int : Ext	Duration of Exam
UC/BSCAB-107/20	Human Values and Professional Ethics	Credits - 2	40:60	03 Hours

Course Objective:

- To facilitate the development of a Holistic perspective among students towards life and profession as well as towards happiness and prosperity based on a correct understanding of the Human reality and the rest of Existence.
- To highlight plausible implications of such a Holistic understanding in terms of ethical human conduct, trustful and mutually fulfilling human behavior and mutually enriching interaction with Nature

Thus, this course is intended to provide a much needed orientational input in value education to the young enquiring minds.

Course Outcome

By the end of the course, students are expected to become more aware of themselves, and their surroundings (family, society, nature); they would become more responsible in life, and in handling problems with sustainable solutions, while keeping human relationships and human nature in mind. They would also become sensitive to their commitment towards what they have understood (human values, human relationship and human society). It is hoped that they would be able to apply what they have learnt to their own self in different day-to-day settings in real life, at least a beginning would be made in this direction.

COURSE TOPICS:

The course has 28 lectures and 14 practice sessions in 5 modules:

Module 1: Course Introduction - Need, Basic Guidelines, Content and Process for Value Education

1. Purpose and motivation for the course, recapitulation from Universal Human Values-I
2. Self-Exploration–what is it? - Its content and process; 'Natural Acceptance' and Experiential Validation- as the process for self-exploration.
3. Continuous Happiness and Prosperity- A look at basic Human Aspirations
4. Right understanding, Relationship and Physical Facility- the basic requirements for fulfilment of aspirations of every human being with their correct priority
5. Understanding Happiness and Prosperity correctly- A critical appraisal of the current scenario.
6. Method to fulfil the above human aspirations: understanding and living in harmony at various levels.

Include practice sessions to discuss natural acceptance in human being as the innate

acceptance for living with responsibility (living in relationship, harmony and coexistence) rather than as arbitrariness in choice based on liking-disliking.

Module 2: Understanding Harmony in the Human Being - Harmony in Myself!

7. Understanding human being as a co-existence of the sentient 'I' and the material 'Body'
8. Understanding the needs of Self ('I') and 'Body' - happiness and physical facility
9. Understanding the Body as an instrument of 'I' (I being the doer, seer and enjoyer)
10. Understanding the characteristics and activities of 'I' and harmony in 'I'
11. Understanding the harmony of I with the Body: Sanyam and Health; correct appraisal of Physical needs, meaning of Prosperity in detail
12. Programs to ensureSanyam and Health.

Include practice sessions to discuss the role others have played in making material goods available to me. Identifying from one's own life. Differentiate between prosperity and accumulation. Discuss program for ensuring health vs dealing with disease.

Module 3: Understanding Harmony in the Family and Society- Harmony in Human-Human Relationship

13. Understanding values in human-human relationship; meaning of Justice (nine universal values in relationships) and program for its fulfilment to ensure mutual happiness; Trust and Respect as the foundational values of relationship.
14. Understanding the meaning of Trust; Difference between intention and competence
15. Understanding the meaning of Respect, Difference between respect and differentiation; the other salient values in relationship.
16. Understanding the harmony in the society (society being an extension of family): Resolution, Prosperity, fearlessness (trust) and co-existence as comprehensive Human Goals.
17. Visualizing a universal harmonious order in society- Undivided Society, Universal Order- from family to world family.

Include practice sessions to reflect on relationships in family, hostel and institute as extended family, real life examples, teacher-student relationship, goal of education etc. Gratitude as a universal value in relationships. Discuss with scenarios. Elicit examples from students' lives.

Module 4: Understanding Harmony in the Nature and Existence - Whole existence as Coexistence

18. Understanding the harmony in the Nature
19. Interconnectedness and mutual fulfilment among the four orders of nature - recyclability and self-regulation in nature
20. Understanding Existence as Co-existence of mutually interacting units in all pervasive space
21. Holistic perception of harmony at all levels of existence.

Include practice sessions to discuss human being as cause of imbalance in nature (film "Home" can be used), pollution, depletion of resources and role of technology etc.

Module 5: Implications of the above Holistic Understanding of Harmony on Professional Ethics

22. Natural acceptance of human values
23. Definitiveness of Ethical Human Conduct
24. Basis for Humanistic Education, Humanistic Constitution and Humanistic Universal Order

25. Competence in professional ethics: a. Ability to utilize the professional competence for augmenting universal human order b. Ability to identify the scope and characteristics of people friendly and eco -friendly production systems. Ability to identify and develop appropriate technologies and management patterns for above production systems.
26. Case studies of typical holistic technologies, management models and production systems.
27. Strategy for transition from the present state to Universal Human Order: a. At the level of individual: as socially and ecologically responsible engineers, technologists and managers b. At the level of society: as mutually enriching institutions and organizations.
28. Sum up.
Include practice Exercises and Case Studies will be taken up in Practice (tutorial)
Sessions eg. to discuss the conduct as an engineer or scientist etc.

Instructions to the Faculty:
The methodology of this course is explorational. It involves a systematic and rational study of the human being vis-à-vis the rest of existence.The teacher is expected to present the issues to be discussed as propositions and encourage the students to have a dialogue. The process of dialogue is enriching for both, the teacher as well as the students.
It would be desirable to follow it up by Faculty -student or mentor-mentee programs throughout their time with the institution.
Evaluation Criteria for Examination/ Question Paper Setting:

The examiner is required to set nine questions with one compulsory question covering entire syllabus and two questions from each unit. Students are required to attempt five questions with minimum one from each unit.

Core References
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IK Gujral Punjab Technical University

Bachelor of Science (Architecture Basics - 1st Semester)

Course Code	Course Name	L - 1	Int. : Ext.	Duration of Exam
UC/BSCAB-108/20	**Life skills**	**Credits - NC**		

Course Objective:

To enable students to cope with challenges of today‟s world and live a life which is socially and emotionally enriching.

Course Outcomes:

At the end of the course, the students will able to Develop an awareness of the self and apply well-defined techniques to cope with emotions and stress. Use appropriate thinking and problem solving techniques to solve new problems. They will be able to understand “How to study”.

Detailed Syllabus:

UNIT- I

Awareness of the surrounding/ immediate environment. Impact of external variable on self & vise- versa

UNIT- II

Critical thinking and its parameter, decision making

UNIT- III

Current affairs (national & global)

UNIT- IV

Self-awareness and empathy, Coping with emotions and stress

Methodology of the course shall be various discussion and sharing experience for the holistic development of students. The suggestive topics can be following but not be limited to these: self-awareness and empathy, coping with emotions and stress, decision making, critical thinking, communication and interpersonal skills.