UNIVERSITY ⬤ OF MYSORE

Estd.1916

Vishwavidyanilaya Karyasoudha
Crawford Hall, Mysore 570 005

──────── (Re-accredited by NAAC at "A" Grade with a CGPA of 3.47) ────────
──────── (NIRF-2020 Ranked 27 in University Category & 47 in Overall Category) ────────

No.: PMEB/AC10/759/2019-20   Date: 28-06-2021

NOTIFICATION

Sub.: Introduction of **B.Voc. (Digital Architecture)** course under Specialized Programmes from the academic year 2020-21-reg.

Ref.: 1. Decision of the BOS Meeting held on 05-01-2021 & 04-03-2021.
2. Decision of the Academic Council meeting held on 07-04-2021.

******

The Board of Studies in **B.Voc. (Digital Architecture) (UG)** at its meetings held on 05-01-2021 and 04-03-2021 has recommended to introduce **B.Voc. (Digital Architecture)** course in University of Mysore under specialized/specified programs. The Regulations, Syllabus and Scheme of Examination was approved from the academic year 2020-21.

The Academic Council has also approved the above said proposals at its meeting held on 07-04-2021 and the same is hereby notified.

The Regulations, Syllabus and Scheme of Examination of **B.Voc. (Digital Architecture)** course is uploaded in University website. The contents may be downloaded from the University website **www.uni-mysore.ac.in.**

REGISTRAR
REGISTRAR
University of Mysore
MYSURU-570 005

To;

1. The Registrar (Evaluation), University of Mysore, Mysuru.
2. The Dean, Faculty of Science & Technology, DOS in Psychology, MGM.
3. Prof. Suresha, Chairperson, BOS in B.Voc. (Digital Architecture) (UG), DOS in Computer Science, Manasagangotri, Mysuru.
4. The Director, Acharya Institute for Innovation and Transformation, Belawadi, Srirangapatna Tq., Mandya Dist.
5. The Deputy Registrar/ Asst. Registrar/ Superintendent, Examination Branch, UOM, Mysuru.
6. The Special Officer to Hon'ble Vice-Chancellor, University of Mysore, Mysuru.
7. The PA to Vice-Chancellor/Registrar/Registrar (Evaluation), University of Mysore, Mysuru.
8. Office Copy.

ACHARYA INSTITUTE FOR INNOVATION AND TRANSFORMATION - MYSURU

Regulations Governing the B. (Voc.) Degree
(DIGITAL ARCHITECTURE)-
B. DArch.
under
CREDIT AND SEMESTER SYSTEM AND GRADING
Scheme for the Distribution of Credits, Period of Instruction and Syllabus

PREAMBLE:

This programme is designed to develop the logical, parametric design thinking, and critical thinking skills in the field of Digital Architectural Technology. We empower the students to apply their skills in Building Design, Project Management and develop their leadership skills thus equipping them for the construction industry. We also make them future ready with a strong foundation and first-hand experience. We follow a pattern of project based learning, where students are exposed to case studies, and learn from real life examples and incorporate it in their design. What is hence learnt remains fresh in the young minds for a longer period of time.

The curriculum is designed with industry collaboration, ensuring students are learning relevant material to what is dominating in the current and future construction market.

AIM

The University Grants Commission (UGC) has launched a scheme on skills development based higher education as part of college/university education, leading to Bachelor of Vocation (B.Voc.) Degree with multiple exits such as Diploma/Advanced Diploma under the NSQF. The B.Voc. programme is focused on universities and colleges providing undergraduate studies which would also incorporate specific job roles and their NOSs along with broad based general education. This would enable the graduates completing B.Voc. to make a meaningful participation in accelerating India's economy by gaining appropriate employment, becoming entrepreneurs and creating appropriate knowledge.

The main objectives of the scheme are:
A. To provide judicious mix of skills relating to a profession and appropriate content of General Education.

B. To ensure that the students have adequate knowledge and skills, so that they are work ready at each exit point of the programme.

C. To provide flexibility to the students by means of pre-defined entry and multiple exit points.

D. To integrate NSQF within the undergraduate level of higher education in order to enhance employability of the graduates and meet industry requirements. Such graduates apart from meeting the needs of local and national industry are also expected to be equipped to become part of the global workforce.

E. To provide vertical mobility to students coming out of 10+2 with vocational subjects.

OBJECTIVES OF THE B. (Voc.) Degree (DIGITAL ARCHITECTURE) - B. DArch

A. To empower the students with the professional competence and expertise of Digital architecture.

B. To emphasize the importance of Digital-aided drawing, building methods and project management using the latest computer programs such as Revit (Building Information Modelling), Rhino/Dynamo and sketch-up in design and construction industry.

C. To familiarize the students about the Construction technologies for materials such as load bearing structures, steel, masonry and precast concrete, and Alternative building technologies.

D. Hands-on skills including lessons on prevailing building codes, building specifications, estimating, and structural and environmental systems knowledge

E. To enable the students to understand Digital architecture, machine learning (Robotics), fabrication technologies, artificial intelligence , Big Data and so on— are soon becoming more and more ubiquitous and pervasive. Increased interest in the impact these technologies are having, and will have, in our daily lives has rapidly expanded the use of these tools in architecture schools, small scale industries, independent firms and international, corporate practices. From augmented reality for construction to 3D printing architectural models to using artificial intelligence within the design process, it is seldom that an architectural project does not use some kind of digital tool either for design or fabrication. This is also the case throughout how we experience the built environment. The digital lifestyle is everywhere; from the infrastructure we use to navigate the world to the objects we use to communicate.

Definitions of Keywords

The following are the definitions/descriptions that have been followed for the different terms used in the Regulations of Bachelor (Voc.) Degree -(DIGITAL ARCHITECTURE) B. DArch:

1) **Programme:** Is an educational programme in a particular stream/ branch of Digital Architecture/branch of specialization leading to award of Bachelor (Voc.) Degree. It involves events/activities, comprising of lectures/tutorials/laboratory work/studio/field work, outreach activities/project work/ vocational training/viva/seminars/Internship/ assignments/ presentations/ self-study etc., or a combination of some of these.

2) **Branch:** Means Specialization or discipline of B. DArch. Bachelor (Voc.) Degree Programme.

3) **Semester:** Refers to one of the two sessions of an academic year(vide:serial number4), each session being of sixteen weeks duration (with working days greater than or equal to ninety).The odd semester may be scheduled from July and even semester from January of the year.

4) **Academic Year:** Refers to the sessions of two consecutive semesters (odd followed by an even) including periods of vacation.

5) **Course:** Refers to usually referred to as 'papers' and is a component of a programme. All Courses need not carry the same weight. The Courses should define learning objectives and learning outcomes. A Course may be designed to comprise lectures/ tutorials/ laboratory work/ studio/case studies/field work/thesis/ outreach activities/project work/ professional training/ viva/ seminars/ term papers/assignments/ presentations/ self-study etc., or a combination of some of these.

6) **Credit:** Refers to a unit by which the Course work is measured. It indicates the relative importance of a given course.

7) **Audit Courses:** Means Knowledge/ Skill enhancing Courses without the benefit of a grade or credit for a Course.

8) **Choice Based Credit System (CBCS):** Refers to customizing the Course work, through Core, Elective and soft skill Courses, to provide necessary support for the students to achieve their goals.

9) **Course Registration:** Refers to formal registration for the Courses of a semester (Credits) by every student under the supervision of a Faculty Advisor (also called Mentor, Counselor etc.,) in each Semester for the Faculty to maintain proper record.

10) **Course Evaluation:** Means Progressive Evaluation[Continuous Internal Evaluation(CIE)] and Semester End Examinations (SEE) to constitute the major evaluations prescribed for each Course.

11) **Progressive Evaluation:** Refers to evaluation of students' achievement in the learning process. Progressive Evaluation shall be by the Course Instructor and includes tests, homework, problem solving, reviews/juries, periodical submissions, desk – crits (criticism), quiz, mini-project and seminar throughout the Semester, with weightage for the different components being fixed at the University level.

12) **Semester end examinations (SEE):** Refers to examination conducted at the University level in each Course covering the entire Course Syllabus. SEE shall be conducted for Term work / Theory/Viva voce.

13) **First Attempt:** Refers to a student who has completed all formalities and has become eligible to attend the SEE and has attended at least one head of passing, such attempt shall be considered as first attempt.

14) **Credit Based System (CBS):** Refers to quantification of Course work, after a student completes Project based learning process, followed by passing in both Progressive Evaluation and SEE. Under CBS, the requirement for awarding degree is prescribed in terms of total number of credits to be earned by the students.

15) **Credit Courses:** All Courses registered by a student in a semester to earn credits. In a widely accepted definition, students must earn credits by registering and passing the courses.

16) **Letter Grade:** It is an index of the performance of students in a said Course. Grades are denoted by letters S, A, B, C, D, E and F.

17) **Grading:** Grade refers to qualitative measure of achievement of a student in each Course, based on the percentage of marks secured in (Progressive Evaluation and SEE). Grading is done by Absolute Grading [Refer: 20BDA5.0]. The rubric attached to letter grades are as follows: S – Outstanding, A – Excellent, B – Very Good, C – Good, D – Above Average, E – Average and F – Fail.

18) **Grade Point (GP):** Refers to a numerical weightage allotted to each letter grade on a 10-point scale as under. Letter Grade and corresponding Grade Points on a typical 10 – Point scale LetterGrade S A B C D E F Grade Point 10 09 08 07 06 04 00

19) **Passing Standards:** Refers to passing a Course only when getting GP greater than or equal to 04 (as per serial number 17).

20) **Credit Point:** Is the product of grade point (GP) and number of credits for a Course i.e., Credtpoints CrP =GP×Credits for the Course.

21) **Semester Grade Point Average (SGPA):** Refers to a measure of academic performance of student/s in a semester. It is the ratio of total credit points secured by a student in various Courses of a semester and the total Course credits taken during that semester. [Refer: 20BDA5.0]

22) **Cumulative Grade Point Average (CGPA):** Is a measure of overall cumulative performance of a student over all semesters. The CGPA is the ratio of total credit points earned by a student in various Courses in all semesters and the sum of the total credits of all Courses in all the semesters. It is expressed up to two decimal places. [Refer: 20BDA5.0]

23) **Transcript or Grade Card or Certificate:** Refers to a certificate showing the grades earned by a student. A grade certificate shall be issued to all the registered students after every semester end examination. The grade certificate will display the programme details (Course code, title, number of credits, grades secured) along with SGPA of that semester and CGPA earned till that semester.

24) **University:** University of Mysore (UoM), Mysuru.

	Regulations Governing the B. (Voc.) Degree - **(DIGITAL ARCHITECTURE) - B. DArch.**
20BDA1.0	**Title, Duration and Credits of the Programme of Study**
20BDA1.1	The programme of study shall be called the Bachelor (Voc.) Degree –(DIGITAL ARCHITECTURE) abbreviated as B. DArch.
20BDA1.2	The B. DArch. programme shall be of Three academic year duration divided into Six semesters and each semester is of 16 weeks duration. The actual teaching and learning days shall be for at least 90 working days in a semester.
20BDA1.3	The calendar of events of the programme of study shall be notified by the University.
20BDA1.4	The University examination shall be conducted at the end of each semester for all the Six semesters.
20BDA1.5	**Maximum Duration for Programme Completion:** (a) Students admitted to I year B. DArch. shall complete the programme. No time limit is considered. (b) As per the UGC guidelines, there are multiple exit point for a candidate admitted in this course. **(c)** If he/she is completing all the six semester successfully, he/she will get **B. Voc degree (Digital Architecture).** (d) If he/she is completing the first four semesters successfully, he/she will get an **Advanced Diploma (Digital Architecture).** (e) If he/she is completing the first two semesters he/she will get a **Diploma (Digital Architecture).** **(f)** B Voc Degree holder is expected to acquire the skills needed for a **Digital Architecture or entrepreneur.** **(g)** Advanced diploma holder is expected to become a multi-skilled **Digital Architecture Associate.** **(h)** Diploma holder is expected to become **Draftsmen.**
20BDA1.6	**Prescribed Number of Credits for the Programme:** The number of credits to be completed by students admitted for (a) B. Voc degree in Digital Architecture programme shall be **180** +1. (b) Advanced diploma in Digital Architecture programme shall be **120** +1 (c) diploma in Digital Architecture programme shall be **60** +1
20BDA2.0	**Eligibility for Admission (As per the Government orders issued from time to time)**
20BDA2.1	**Admission to the first year of the course shall be open to the students Level 5** (a) who have passed the two year Pre-University examination conducted by the Karnataka State Pre-University Board with any discipline; or (b) who have passed 10+2 of the Central Board of Secondary Education (CBSE) or equivalent with any discipline; or (c) who possess Three-Year Diploma in Architecture recognized by Government of Karnataka, or any other State Government or Central Government (d) who possess Three-Year Diploma in any stream of engineering recognized by Government of Karnataka, or any other State Government or Central Government

	Regulations Governing the B. (Voc.) Degree - **(DIGITAL ARCHITECTURE) - B. DArch.**
20BDA2.1 (continued)	(d) Who have passed any other examination recognized by the University as equivalent thereto. (e) **B.Vocational Advanced Diploma – (Digital Architecture) (Level 6):** A candidate who has passed B.Vocational Diploma examination or first year Bachelor's degree examination in Architecture / Digital Architecture of University of Mysore or any other University considered as equivalent there to is eligible for admission to this programme as lateral entry with passing marks in attitude test conducted by the institute. (f) A candidate who has passed B.Vocational Diploma examination or first year Bachelor's degree examination in any stream of engineering of University of Mysore or any other University considered as equivalent there to is eligible for admission to this programme as lateral entry with passing marks in attitude test conducted by the institute. (g) **B.Vocational Degree – (Digital Architecture) (Level 7):** A candidate who has passed B.Vocational Advanced Diploma examination or second year Bachelor's degree examination in Architecture / Digital Architecture of University of Mysore or any other University considered as equivalent thereto is eligible for admission to this programme with passing marks in attitude test conducted by the institute. (h) A candidate who enters to Level 5 in particular specialization shall select same specialization in Level 6 and 7. (i) A Candidate who enters vocational programme from a conventional bachelors degree programme has to clear attainment of competencies required for earlier 4 Levels through on-line or off-line mode, as a part of eligibility for admission to a chosen Vocational programme.
20BDA2.2	The candidates shall have secured a minimum of 50 % of marks in aggregate in the qualifying examination. Provided that candidates belonging to Scheduled Castes and Scheduled Tribes and any other groups classified by the Government of Karnataka for such purpose from time to time shall be considered eligible for admission, if they have passed the qualifying examination giving eligibility for the admission with 45% of marks in aggregate.
20BDA2.3	All the candidates seeking admission to B.DArch. shall pass/qualify the **Aptitude Test in Digital Architecture (ATDA)** conducted by the institution or any specially designed aptitude test in Architecture conducted by the Competent Authority of the Central / State Government or JEE Paper-II examination conducted by CBSE . This condition shall be fulfilled by all candidates including those belonging to Scheduled Castes, scheduled tribes and other classified groups.
20BDA2.4	Those students, who have passed a qualifying examination other than the PUC II examination of the Pre-University Education Board of Karnataka, have to obtain eligibility certificate for seeking admission to B.DArch. Degree Programme from University of Mysore in association with AIIT
20BDA2.5	Candidates admitted to the (g) B.Vocational Degree – (Digital Architecture)programme from other Diploma streams shall not be entitled to any exemption of any Course of the programme unless and otherwise specified in 20BDA2.1
20BDA3.0	**Courses**

20BDA3.1	Course includes instructions on visual representation, building science, site planning and technical communications. Electives include bath and kitchen, interior detailing, National building code (legal), augmented reality, Morphology design thinking, The Proto-Parametricists, A Cybernetic Revolution, Computing design, Parametric Explosion, Augmenting Reality, Digital Fabrication, Robotics, Radical Rethinking, AI within the design process, Data science, fabrication, high-rise building's design and more.
	BDA= Digital Architectural Subjects; DRT= Digital Art Subjects; DRT= Digital Art Subjects; DAE = Engineering Subjects; HAP = Humanities and Psychology Subjects. Subject Categories:- GE = General Education; CEA = Cultural & Extracurricular Activities; SDC = Skill Development Components; OE = Optional Elective. Details will be as per the scheme.

	(DIGITAL ARCHITECTURE) - B. DArch.
20BDA3.2	The minimum number of students registered to any Elective Course offered by the Department/College shall be not less than ten. However, the above condition shall not be applicable if the class strength is less than 10.
20BDA3.3	A student shall exercise his option in respect of Elective Courses and register for the same at the beginning of the concerned semester. The student may be permitted to opt for a change of Elective Course within 15 days from the date of commencement of the semester as per the calendar of the University.
20BDA3.4	**Course Registration:** Every student shall register for the Courses of a semester (Credits) under the supervision of a Faculty Advisor (also called Mentor, Counselor etc.,) in each Semester for the Institution to maintain proper record.
20BDA4.0	**Study Tour, Professional Training and Professional Training**
20BDA4.1	**Study Tour** A minimum of One study tours each of 4 to 10 days duration shall be completed, one before the end of each semester. The students have to submit a study tour report as group work (4 to 6 students per group) within 15 days after the end of the study tour. The reports shall be evaluated by the departments/ colleges for awarding the progressive mark of the Soft skills. The average marks obtained by a student in the two study tour reports shall be the progressive marks for the course Soft skills. The department/ college shall use its discretion about the choice of places and buildings to be visited for study tour. The study tour may include places of architectural interest in India or abroad. Students who cannot attend the study tour due to ill-health or any other compelling reasons shall undertake a study assignment in lieu of study tour.
20BDA4.2	**Professional Training** At the end of each semester students shall undergo Professional Training for a period of 02 weeks under the supervision of a practicing architect. The students are permitted to carry out the professional training anywhere in India or abroad. Students opting to undergo training abroad shall work only under the Principal architect of firms registered with the local affiliating body of architects. The University/college will not provide any kind of financial assistance to any student for carrying out the professional training.
20BDA4.3	The commencement of professional training shall be the date of end of respective semester as notified by the University. The duration of professional training shall be counted from the date of commencement of the training.
20BDA4.4	The students shall undergo professional training in single organization only in each semester. The change of office /firm shall be permitted only under extraordinary circumstances with due approval of the Principal/HoD.

	Regulations Governing the B. (Voc.) Degree - # (DIGITAL ARCHITECTURE) - # B. DArch.
20BDA4.5	All the students shall submit the logbook, training report along with the training completion certificate duly signed by the Principal Architect of the firm to the Head of the Department of Architecture / Principal. The report shall comprise of certified print out of drawings, site notes and any other relevant work carried out during training period.
20BDA4.6	The college / department shall maintain the record of the students undergoing training in form of joining report, periodical log reports, etc.
20BDA4.7	The candidates who have completed the Professional Training shall attend the viva-voce examination conducted by two University appointed examiners, one internal examiner and one external examiner. Each candidate shall produce the logbook, training report and training completion certificate duly signed by the Principal Architect of the firm to the examiners.
20BDA4.8	Failing to undergo Professional Training: Professional Training is one of the head of passing. Completion of 02 week training is mandatory. If a student fails to undergo/ complete the 02 week training, he/she shall be considered as fail in that Course and shall not be permitted to appear for next semester. The student shall appear for the subsequent SEE in Professional Training after repeating and satisfying the conditions prescribed Training. The reappearance shall be considered as an attempt.
20BDA4.9	**Digital Architectural Design Project (Thesis)** The thesis project is the culmination of the learning under B.DArch. programme. The thesis provides an opportunity to the students to experiment an architectural idea with comprehensive application of understanding of various aspects of buildings / built environment. The Digital architectural design project chosen by a student can be of any scale which can be adequately handled in all semester. The genre of the project shall end with a design solution.
20BDA5.0	**Computation of SGPA and CGPA**
20BDA5.1	(i) The University adopts absolute grading system wherein the marks are converted to grades, and every semester results will be declared with semester grade point average (SGPA) and Cumulative Grade Point Average (CGPA). The CGPA will be calculated for every semester, except for the first semester. (ii) The grading system with the letter grades and the assigned range of marks under absolute grading system are as given Annexure - 1
20BDA5.2	Grade Card: Based on the secured letter grades, grade points, SGPA and CGPA, the transcript for each semester and a consolidated transcript indicating the performance in all semesters shall be issued.
20BDA6.0	**Conversion of CGPA into Percentage of Marks and Class Equivalence**
20BDA6.1	Formula for the conversion of CGPA into percentage is given below: Percentage of marks secured, P = [CGPA Earned- 0.75] × 10 Illustration for a CGPA Of 8.20: P = [CGPA Earned8.2 - 0.75]× 10 = 74.5 %

	Regulations Governing the B. (Voc.) Degree - **(DIGITAL ARCHITECTURE) - B. DArch.**
20BDA6.2	**Class Equivalence:** Subsequent to the conversion of final CGPA,after successful completion of the programme, into percentage of marks (P), a graduating student is reckoned to have passed in (i) First Class with Distinction (FCD) if P ≥ 70% (ii) First Class (FC) if P ≥ 60% but <70% and (iii) Second Class (SC) if P < 60%.
20BDA7.0	**Progressive Evaluation and Semester End Examination**
20BDA7.1	Progressive Evaluation marks and SEE marks (Theory / Term work /Viva voce marks), shall be as prescribed in Scheme of Teaching and Examination.
20BDA7.2	**Progressive Evaluation** The minimum Progressive marks to be secured by the students in all the courses shall be 50 % of the maximum marks prescribed for the Progressive Evaluation. (a) In case of theory courses which are mainly lecture based as per the scheme of teaching and examinations, the Progressive Evaluation marks shall be based on the average of three tests conducted covering the entire syllabus. In addition, the teacher may give assignments instead of tests which may include sketching, book reviews, write-ups etc. (b) In case of courses which are mainly studio based as per the scheme of teaching and examinations, the Progressive marks shall be the sum total of marks given to the various drawings (plates) submitted from time to time by a student on tracing sheets / drawing sheets or Computer printouts/sketches/ models on the basis of internal reviews / juries / desk crits (criticisms). However, if the course teacher so desires, he/she shall give some weightage for time bound exercises/ problems / tests in these courses for the award of progressive marks. In a semester, two to three such time problems / tests may be conducted. (c) In case of courses which are mainly practical based as per the scheme of teaching and examinations, the Progressive marks shall be based on the assignments submitted by the students. A minimum of three assignments per semester shall be given. (d) In all the above three cases, viz. lectured based, studio based, and term work based courses the concerned teacher shall give a reasonable opportunity to the student to improve his / her Progressive marks for example by re-doing the assignments or attending an additional test etc., within the time frame of the given semester. (e) The Progressive marks in the case of Digital Architectural Design Project (Thesis) at the end of semester shall be based on the evaluation of the project work (Thesis) through internal reviews/juries and desk crits etc., in accordance to the scheme of teaching and examination.

20BDA7.3	All the relevant records and submissions of students pertaining to Progressive Evaluation shall be preserved by the Principal/ Head of the Department for at least six months after the announcement of University results and shall be made available for verification at the direction of the University authorities.
20BDA7.4	(a) Students failing to secure a minimum of 50 % of the Progressive marks and students who remain absent for all the Progressive Evaluation shall not be eligible for the examination conducted by the University and they shall be considered as fail in that/those Course/s. However, they can appear for University examinations conducted in other Courses of the same semester and backlog Course/s if any. (b) Improvement in progressive marks shall only be allowed during the subsequent semester when the course is offered as per the scheme of teaching. (The students can register for improvement of marks of odd semester subjects during odd semester only, similarly the registration for improvement of marks of even semester subjects shall be permitted during even semester only) (c) Students who have satisfied the attendance requirement but not the minimum progressive marks requirements shall be permitted to register afresh and appear for SEE after satisfying the progressive evaluation requirements in the same Course/s when the course is offered during subsequent semester/s. (d) Each appearance to SEE to complete a course shall be treated as an attempt. (e) Candidates shall register their names in their college for satisfying progressive marks requirements within 15 days from the commencement of the subsequent semesters during which the course is offered as per the scheme of teaching. The college shall get the permission from UoM for such cases.
20BDA7.5	The list of such candidates, who have not secured the minimum progressive marks, shall be sent to the University along with the submission of progressive marks of the successful candidates.
20BDA7.6	Improvement of Progressive Evaluation marks shall not be allowed in case the student has already secured the minimum required marks.
20BDA7.7	The final list, incorporating corrections (if any) of Progressive Evaluation marks awarded to the students in all the courses, shall be displayed on the notice board of the college at least seven days before the closure of the semester. The institution shall enter the progressive marks of each semester in the format of the UoM online/Offline CIE marks portal and submit a certified copy of the same to the University Examination Section within the stipulated date notified by University. Every page of the Progressive Evaluation marks sheet (hardcopy) shall bear the signatures of the concerned Teacher/Teachers, Head of the Department and Principal.

	Regulations Governing the B. (Voc.) Degree - ## (DIGITAL ARCHITECTURE) - # B. DArch.
20BDA7.8	Any corrections or overwriting of Progressive Evaluation marks shall bear the signature(s) of concerned Teacher(s) and in such cases the Head of the Department shall indicate the number of corrections on every sheet and attest it with his/her signature.
20BDA7.9	Progressive Evaluation marks shall reach the University before the commencement of examination as per the notification from the office of the Registrar (Evaluation) from time to time. After the submission of Progressive Evaluation marks to the University, any request under any circumstances for change of Progressive Evaluation marks shall not be considered.
20BDA7.10	**Semester End Examination and Passing standards** For a pass in a course (theory/viva voce/term work), a candidate shall secure a minimum 40 % in the University examination. (a) The University examination in Term work refers to the evaluation of complete course portfolios produced by students during a semester. (b) The Term work examination shall be conducted, in the absence of candidates, by internal and external examiners appointed by the University. (c) The viva voce examination, as per scheme of teaching and examination, shall be conducted by internal examiner (Course teacher /senior faculty/visiting teacher working as full time or part-time teacher in an institution) and external examiners (a teacher or a professional not working in the same institution) appointed by the University. A consolidated marks shall be awarded by the examiners after a joint evaluation. (d) The viva voce examination, in the Digital Architectural Design Project (Thesis) shall be conducted by one internal and two external examiners, all appointed by the university. The maximum number of candidates assigned shall not exceeded 10 per batch and 3 batches per day to a panel of examiners in a day. (e) Candidates shall be present in person for Digital Architectural Design Project (Thesis) examinations and submit the portfolio of works done (detailed set of drawings, sketches and models) during the semester and answer the queries of the examiners in respect of portfolio.
20BDA7.11	(a) Students who obtain any grade from S to E in courses prescribed for only progressive marks and for both progressive and SEE marks shall be considered as passed the course. (b) If a student secures F grade in any of the head of passing, he/she has to reappear in that head for the SEE. The Progressive Evaluation marks awarded to the student/s at first attempt in the failed Course/s shall be carried forward.
20BDA7.12	Students who pass a Course of a semester shall not be allowed to appear for any individual Course again, unless they opt for rejection of results of entire semester.

(DIGITAL ARCHITECTURE) -
B. DArch.

20BDA7.13	A student may, at his/her desire, reject the total performance of a semester (including Progressive Evaluation marks) or reject the result of his/her performance in University examination of a semester only without rejecting the progressive marks. The rejection is permitted only once during the entire programme of study.
20BDA7.14	The student who desires to reject the results of a semester shall reject performance in all the Courses of the semester, irrespective of whether the student has passed or failed in any Course. However, the rejection of performance of each semester Professional Training shall not be permitted.
20BDA7.15	(a) Students, who desire to reject the total performance of a semester including Progressive Evaluation marks, have to repeat that odd or even semester of the prevailing scheme by taking readmission during the subsequent academic year/s. They shall also be governed by 20BDA11.1 and 11.2. (b) If the rejection of SEE results excluding the progressive marks is of odd semester, students shall be allowed to take admission to the immediate next even semester. If the rejection of SEE results excluding the progressive marks is of even semester, then students shall not be allowed to take admission to the next odd semester as per 20BDA9.2. In such cases, students shall take admission to the next odd semester of the prevailing scheme during the subsequent academic year/s, after obtaining the eligibility to move to higher semester. They shall also be governed by 20BDA11.1 and 11.2. (c) Readmission to odd/even semester as per 20BDA7.15 (i) and (iii) shall not be considered as fresh admission and therefore students shall continue to have the same University Seat Number, which was allotted earlier. The Course duration (as per 20OBDA1.5) will be counted with reference to old USN. (d) Applications for rejection and approval to reappear for University examinations shall be sent to the Registrar (Evaluation) through the Principal of the College within 30 days from the date of announcement of the results. Late submission of applications shall not be accepted for any reasons. (e) Application for approval of readmission shall be sent to the Registrar through the Principal of College within 30 days from the date of the announcement of the results. Late submission of application shall not be accepted for any reasons.
20BDA7.16	Students who opt for rejection of results of University examination are eligible for the award of degree, but are not eligible for the award of ranks.
20BDA8.0	**Attendance Requirement**
20BDA8.1	Courses of each semester shall be treated as a separate unit for calculation of the attendance. The candidate has to put in a minimum attendance of 85% in each Course with a provision to condone 10% of the attendance by the Vice-Chancellor on the specific recommendations of the Principal of the college where the candidate is studying, based on medical grounds, participation in University/State/ National/ International level sports and cultural activities, seminars, workshops, paper presentation etc., of significant value.

(DIGITAL ARCHITECTURE) - B. DArch.

20 BDA 8.1 (continued)	The supporting documents for condoning the shortage of attendance are to be submitted along with the recommendations. The basis for the calculation of the attendance shall be the period prescribed by the University by its calendar of events.
20BDA8.2	The Course Instructor/ Mentor/College shall inform the students as well as their parents about the attendance status periodically. Students who are facing the shortage of attendance be mentored to make up the shortage. Principals shall also notify every month, the list of candidates who are under short of attendance.
20BDA8.3	A candidate, who does not satisfy the attendance requirement (in one or more Courses) as mentioned in 20BDA8.1 shall not be eligible to appear for the SEE of that semester and shall not be permitted to take admission to next higher semester. The candidate shall be required to repeat that semester during the subsequent year.
20BDA8.4	The list of the candidates falling short of attendance shall be sent to Registrar (Evaluation) at least once in a month and final list shall be sent one week prior to the commencement of the examination. The detained students should obtain permission from Registrar, UoM for readmission to the semester concerned as a repeater.
20BDA9.0	**Vertical Progression (Promotion/ Eligibility to higher semesters)**
20BDA9.1	(a) There shall be no restriction for promotion from an odd semester to the next even semester, provided the student has fulfilled the attendance requirement, except in the case of promotion from V semester to VI semester. (b) A student shall be eligible for promotion from V semester to VI semester provided, he/she has passed the course Professional Training of VI semester. If the candidate has not undergone the training/discontinued after registration to training/not undergone the prescribed training period of 16 weeks/ failed in viva voce examination, he/ she shall repeat the Professional Training during subsequent semester to appear for the SEE. (c) A student shall be declared fail if the candidate (i) Fails to satisfy the minimum progressive marks conditions. (ii) Absents himself / herself to the University examination. (iii) Is held guilty of examination malpractice and for any other reasons, and declared the performance of any Course/s null and void by a competent authority. (iv) If a student secures F grade in any of the Course/s, he/she shall reappear in that Course/s during the subsequent SEE. The progressive marks awarded to the student at first attempt in the concerned Course/s shall be carried forward. Newly earned progressive marks is considered only in cases of 20BDA7.4.

(DIGITAL ARCHITECTURE) - B. DArch.

20BDA9.2	**Vertical Progression:** (a) Each credit Course shall be treated as a head of passing. (b) Students having not more than four F grades in the two semesters of first year of the Programme shall be eligible to move to II Year. (c) Students having not more than four F grades in the four semesters of I and II year shall be eligible to move to III year.
20BDA10.0	**Award of Degree**
20BDA10.1	(a) Students shall be declared to have completed the B.DArch. programme and shall be eligible for the award of B.DArch. degree, provided the students have undergone the stipulated Course work of all the semesters under the same Scheme of Teaching and Examination and has earned the prescribed number of credits as per the provision 20BDA1.6. [To be read along with 20BDA11.1 and 11.2.] (b) For the award of degree, a CGPA ≥5.00 at the end of Programme shall be mandatory. [to be read with 20BDA10.0 and 11.0]
20BDA10.2	**Noncompliance of CGPA ≥ 5. 00 at the end of the programme** (a) Students who have completed all the courses of the programme but not having a CGPA ≥ 5.00 at the end of the programme, shall not be eligible for the award of the degree. In such cases, students shall be permitted to appear again for SEE in course/s [other than Professional training and Digital Architectural Design Project (Thesis)] of any Semester/s without the rejection of progressive evaluation marks for any number of times, subject to the provision of maximum duration of the programme to make up the CGPA equal to or greater than 5.00 for the award of the Degree. (b) In case, the students earn improved grade/s in all the reappeared course/s, the CGPA shall be calculated considering the improved grade/s. If it is ≥ 5.00, the students shall become eligible for the award of the degree. If CGPA <5.00, the students shall follow the procedure laid in 20BDA10.2 (a). (c) In case, the students earn improved grade/s in some course/s and the same previously earned pass grade/s in the other reappeared course/s, the CGPA shall be calculated considering the improved grade/s. If it is ≥ 5.00, the students shall become eligible for the award of the degree. If CGPA <5.00, the students shall follow the procedure laid in 20BDA10.2 (a). (d) (d)In case, the students earn improved grade/s in some courses and fail in the other reappeared course/s, the CGPA shall be calculated by considering the improved grade/s and the previously earned pass grade/s of the reappeared course/s in which the students have failed. If it is ≥ 5.00, the students shall become eligible for the award of the degree. If CGPA <5.00, the students shall follow the procedure laid in 18OBA10.2 (a).

(DIGITAL ARCHITECTURE) - B. DArch.

20BDA10.2 (Continued)	(e) In case, the students fail (i.e., earns F grade) in all the reappeared course/s, pass grade/s of the course/s earned by the students before reappearance shall be retained. In such cases, the students shall follow the procedure laid in 20BDA10.2 (a).
	(f) Students shall obtain written permission from the Registrar (Evaluation) to reappear in SEE to make up the CGPA equal to or greater than 5.00.
20BDA11.0	**Temporary Discontinuation/Break in the Program**
20BDA11.1	(a) If a candidate, for any reason, temporarily discontinues the Programme or take a break from the Programme during any semester intentionally, he/she shall be permitted to continue the Programme by registering to the same semester of the prevailing scheme. The candidate shall complete all the remaining Course work subject to the provision 20BDA1.5. Also the Candidates may have to complete additional Course/s, if any, as per the decision of Board of Studies in B.DArch and approval of Dean, Faculty of Digital Architecture , on establishing the equivalence between two schemes.
	(b) A Grade card shall be issued to that effect. Additional Course/s shall not be considered for the eligibility criteria prescribed for promotion. However, based on the individual cases, they shall be considered to decide the SGPA and CGPA to admit the student for the award of degree. Such candidates shall not be eligible for the award of rank.
	(c) Candidates who take admission to any semester of the existing scheme from another scheme, as a repeater/fresher because of various reasons, including the case of 20BDA11.1(a),
20BDA11.1 (Continued)	shall attend and complete all the remaining semester/s of the Programme adhering to the regulations of the prevailing scheme, and shall complete additional Course/s, if any, as per the decision of Board of Studies in B.DArch and approval of Dean, Faculty of Digital Architecture , on establishing the equivalence between two schemes.
	(a) A Grade card shall be issued to that effect. Additional Courses shall not be considered for the eligibility criteria prescribed for promotion. However, based on the individual cases, they shall be considered to decide the SGPA and CGPA to admit the student for the award of degree. Such candidate shall not be eligible for the award of rank.
	(b) The credits to be earned by the candidates under 20BDA11.1 (a and b) and BDA13.1 (b) and (c) shall be decided by the University along with the additional Course/s to be completed.

	Regulations Governing the B. (Voc.) Degree - **(DIGITAL ARCHITECTURE) - B. DArch.**
20BDA11.2	(a) The candidates who have temporarily discontinued the Programme of study or changed the scheme of study from one to another because of various reasons, or transferred from autonomous/other University to non-autonomous UoM affiliated college, shall be eligible for the award of degree provided the credits earned is equal to or greater than the credits decided by the University in the individual cases. (b) In case, the credits earned is less than the credits decided by the University in the individual cases, after the completion of all the semesters of the Programme under the prevailing scheme, the candidate shall register for a Course or courses not studied earlier and make up the credits earned equal to or greater than the required for the award of degree.
20BDA12.0	**Award of Prizes, Medals and Ranks**
20BDA12.1	For the award of Prizes and Medals, the conditions stipulated by the Donor shall be considered subject to the provisions of the statutes framed by the University for such awards.

20BDA12.2	(a) For award of rank in B. DArch, the CGPA secured by the students from I to VI semester shall be considered.
	
	(b) A student shall be eligible for a rank at the time of award of of Bachelor (Voc.) Degree of Digital Architecture, provided the student
	  (i) Has passed I to VI semester in all the Courses in first attempt only.
	    Is not a repeater in any semester because of rejection of result of a semester/ shortage of attendance etc.
	
	  (ii) Has completed all the semesters without any break/discontinuity.
	
	  (iii) Has completed all the semesters (I to VI) in UoM constituent college or in any UoM affiliated non-autonomous college.
	  (iv) Has not been transferred from any autonomous institution affiliated to UoM or from any other University.
	(c) The total number of ranks awarded shall be 10% of the total number of students appeared in VI semester subject to a maximum of 10 ranks.
	(d) For award of ranks in B.DArch, a minimum of 10 students should have appeared in the VI semester examination.
	(e) Illustration:
	  (i) If 1333 students appeared for the VI semester B. DArch programme, the number of ranks to be awarded shall be 10.
	  (ii) If 90 students appeared for the VI semester in B. DArch programme, the number of ranks to be awarded shall be 09.
	(f) In case of fractional number of ranks, it is rounded to higher integer only when the first decimal place value is greater than or equal to 5.

20BDA12.3	Ranks are awarded based on the merit of the students as determined by CGPA. If two or more students get the same CGPA, the tie shall be resolved by considering the number of times a student has obtained higher SGPA. If it is not resolved even at this stage, the number of times a student has obtained higher grades like S, A, B etc., shall be taken into account to decide the order of the rank.
20BDA13.0	**Transfers of Students**
20BDA13.1	Transfer of students from one college to another college within the Karnataka state shall be permitted only at the beginning of third, and fifth, semesters, subject to availability of seats within the permitted intake in respective Colleges and subject to the prior approval of the University. Transfer of students from one non - autonomous to another non – autonomous college affiliated to UoM is permitted with the approval of the Registrar, UoM subject to the provision 20BDA9.2. **The students seeking transfer shall have to** (i) Obtain No Objection certificate for admission from the University and from both the colleges before the commencement of term as notified by UoM. (ii) Complete the Programme subject to the provision 20BDA1.5. Transfer of students from an autonomous to non – autonomous college, affiliated to UoM is permitted with the approval of the Registrar, UoM provided the candidates have passed in all the Courses of the previous semesters. **The students seeking transfer shall have to** (i) Obtain No Objection certificate for admission from the University and from both the colleges before commencement of term as notified by UoM. (ii) Complete additional Course/s, if any, as per the decision of concerned Board of Studies and approval of Dean, Faculty of Digital Architecture , on establishing the equivalence between two schemes. A Grade card shall be issued to that effect. Additional Course/s shall not be considered for the Eligibility criteria prescribed for promotion, Class, calculation of SGPA and CGPA. However, a pass in the additional Courses, if any, is mandatory before the completion of Degree. (iii) Earn the credits decided by the University as per 20BDA11.2. (iv) Complete the Programme subject to the provision 20BDA1.5.

	Regulations Governing the B. (Voc.) Degree - **(DIGITAL ARCHITECTURE) - B. DArch.**
20BDA13.1 (Continued)	**The students seeking admission from other Universities to UoM shall have to** (i) Apply for establishment of equivalence with prescribed fees as notified by the UoM and obtain No Objection certificate for admission from the University before the commencement of term as notified by UoM. (ii)Produce No Objection certificate for admission from both the colleges before the commencement of term as notified by UoM. (iii) Complete additional Course/s, if any, as per the decision of concerned Board of Studies and approval of Dean, Faculty of Digital Architecture , on establishing equivalence between two schemes. A Grade card shall be issued to that effect. Additional Course/s shall not be considered for the eligibility criterion prescribed for promotion, Class, calculation of SGPA and CGPA. However, a pass in the additional Courses, if any, is mandatory before the completion of Degree. (iv) Earn the credits decide by the University as per 20BDA 11.2. (v) Complete the Programme subject to the provision 20BDA1.5.
20BDA13.2	The University may prescribe a fee for administrative purpose, which shall be notified from time to time, for transfer from one college to another (Change of College).
20BDA14.0	**Applicability and Power to Modify**
20BDA14.1	The regulations governing the B. (Voc.) Degree of Digital Architecture of University of Mysore shall be a binding on all concerned.
20BDA14.2	i) Not withstanding anything contained in the foregoing, the University shall have the power to issue directions/ orders to address any difficulty. ii) Nothing in the foregoing may be construed as limiting the power of the University to amend, modify or repeal any or all of the above.

ACHARYA INSTITUTE FOR INNOVATION AND TRANSFORMATION - MYSURU
SCHEME (2020-2021) OF PROJECT BASED LEARNING AND EXAMINATION OF I SEM
B. (Voc.) Degree - DIGITAL ARCHITECTURE - DA

S N	Subject Code	Subject Category	Title of the Subject	Teaching Scheme in Periods per Week (60 Mins)					Examination Scheme						
				Lecture	Studio		Pract/ Tutorial/ Seminars	Total	Dur (hrs)	Theory Marks	Prog. /CIE Marks	Term work Marks	Viva Marks	Total	Credits
					Core	Applied									
1	20BDA11	SDC	DESIGN PRINCIPLES	2		5	4	11			50		50	100	9.0
2	20BDA12	SDC	VISUAL GRAPHICS	1	2	3		6				50	50	100	6.0
3	20BDA13	SDC	MATERIAL AND METHODS OF CONSTRUCTION-I	1		3		4	2	50	50			100	4.0
4	20DAE14	SDC	SURVEYING & DOCUMENTING	2			2	4			50	50		100	3.0
5	20BDA15	SDC/OE	ELECTIVE (on software skill)	1			2	3			50	50		100	2.0
6	20HAP16	GE	SOFT SKILL-TECHNICAL READING, WRITING AND PEER TEACHING	2			2	4	1	25	25	50		100	3.0
7	20HAP17	GE	LIFE SKILL AND PUBLIC SERVICES	2			2	4	1	25	25	50		100	3.0
8	20HAP18	CEA	SPORTS AND CULTURE				2	2			50	50		100	1.0
			Total	**11**	**2**	**11**	**14**	**38**	**4**	**100**	**300**	**300**	**100**	**800**	**31.0**
		No. of Subjects/Heads =	**8**		No. of Theory Examinations =		**3**								

BDA= Digital Architectural Subjects; **DRT=** Digital Art Subjects; **DRT=** Digital Art Subjects; **DAE =** Engineering Subjects; **HAP =** Humanities and Psychology Subjects.

Subject Categories:- GE = General Education; **CEA =** Cultural & Extracurricular Activities; **SDC =** Skill Development Components; **OE =** Optional Elective

Minimum Marks for passing: Progressive Marks **50%,** Theory marks, Term work marks and Viva marks **40% in each**

Progressive Marks to be awarded by the subject teacher. Term work & Viva Voce examination shall be conducted jointly by one internal & one external examiner appointed by the University.

ACHARYA INSTITUTE FOR INNOVATION AND TRANSFORMATION-MYSURU
SCHEME (2020-2021) OF PROJECT BASED LEARNING AND EXAMINATION OF II SEM
B. (Voc.) Degree - DIGITAL ARCHITECTURE - DA

S N	Subject Code	Subject Category	Title of the Subject	Teaching Scheme in Periods per Week (60 Mins)					Examination Scheme						
				Lecture	Studio		Pract/ Tutorial/ Seminars	Total	Dur (hrs)	Theory Marks	Prog. /CIE Marks	Term work Marks	Viva Marks	Total	Credits
					Core	Applied									
1	20BDA21	SDC	DIGITAL DESIGN PRINCIPLES	2		5	4	11			50		50	100	9.0
2	20BDA22	SDC	STRUCTURES I	1	2	3		6				50	50	100	6.0
3	20BDA23	SDC	MATERIAL AND METHODS OF CONSTRUCTION-II	1		3		4	2	50	50			100	4.0
4	20DAE24	SDC	NATIONAL & REGIONAL BUILDING CODE	2			2	4			50	50		100	3.0
5	20BDA25	SDC/OE	ELECTIVE (Software Rhino)	1			2	3			50	50		100	2.0
6	20HAP26	GE	SOFT SKILL-TECHNICAL READING, WRITING AND PEER TEACHING	2			2	4	1	25	25	50		100	3.0
7	20HAP27	GE	LIFE SKILL AND PUBLIC SERVICES	2			2	4	1	25	25	50		100	3.0
8	20HAP28	CEA	SPORTS AND CULTURE				2	2			50	50		100	1.0
			Total	**11**	**2**	**11**	**14**	**38**	**4**	**100**	**300**	**300**	**100**	**800**	**31.0**

No. of Subjects/Heads =	**8**	No. of Theory Examinations =	**3**	

BDA= Digital Architectural Subjects; **DRT=** Digital Art Subjects; **DRT=** Digital Art Subjects; **DAE =** Engineering Subjects;   **HAP =** Humanities and Psychology Subjects.

Subject Categories:-   GE = General Education;   **CEA =** Cultural & Extracurricular Activities;   **SDC =** Skill Development Components;   **OE =** Optional Elective

Minimum Marks for passing: Progressive Marks **50%,**   Theory marks, Term work marks and Viva marks **40% in each**

Progressive Marks to be awarded by the subject teacher. Term work & Viva Voce examination shall be conducted jointly by one internal & one external examiner appointed by the University.

ACHARYA INSTITUTE FOR INNOVATION AND TRANSFORMATION-MYSURU
SCHEME (2020-2021) OF PROJECT BASED LEARNING AND EXAMINATION OF III SEM
B. (Voc.) Degree - DIGITAL ARCHITECTURE - DA

S N	Subject Code	Subject Category	Title of the Subject	Teaching Scheme in Periods per Week (60 Mins)					Examination Scheme						
				Lecture	Studio		Pract/ Tutorial/ Seminars	Total	Dur (hrs)	Theory Marks	Prog. /CIE Marks	Term work Marks	Viva Marks	Total	Credits
					Core	Applied									
1	20BDA31	SDC	DIGITAL DESIGN APPLICATIONS	2		5	4	11			50		50	100	9.0
2	20BDA32	SDC	BUILDING SERVICES	1	2	3		6				50	50	100	6.0
3	20BDA33	SDC	MATERIAL AND METHODS OF CONSTRUCTION-III	1		3		4	2	50	50			100	4.0
4	20DAE34	SDC	ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING IN ARCHITECTURAL DESIGN	2			2	4			50	50		100	3.0
5	20BDA35	SDC/OE	ELECTIVE(VR & AR)	1			2	3			50	50		100	2.0
6	20HAP36	GE	SOFT SKILL-TECHNICAL READING, WRITING AND PEER TEACHING	2			2	4	1	25	25	50		100	3.0
7	20HAP37	GE	LIFE SKILL AND PUBLIC SERVICES	2			2	4	1	25	25	50		100	3.0
8	20HAP38	CEA	SPORTS AND CULTURE				2	2			50	50		100	1.0
			Total	**11**	**2**	**11**	**14**	**38**	**4**	**100**	**300**	**300**	**100**	**800**	**31.0**

No. of Subjects/Heads =	**8**		No. of Theory Examinations =	**3**	

BDA= Digital Architectural Subjects; **DRT=** Digital Art Subjects; **DRT=** Digital Art Subjects; **DAE =** Engineering Subjects; **HAP =** Humanities and Psychology Subjects.

Subject Categories:- GE = General Education; **CEA =** Cultural & Extracurricular Activities; **SDC =** Skill Development Components; **OE =** Optional Elective

Minimum Marks for passing: Progressive Marks **50%,** Theory marks, Term work marks and Viva marks **40% in each**

Progressive Marks to be awarded by the subject teacher. Term work & Viva Voce examination shall be conducted jointly by one internal & one external examiner appointed by the University.

ACHARYA INSTITUTE FOR INNOVATION AND TRANSFORMATION-MYSURU
SCHEME (2020-2021) OF PROJECT BASED LEARNING AND EXAMINATION OF **IV SEM**
B. (Voc.) Degree - DIGITAL ARCHITECTURE - DA

S N	Subject Code	Subject Category	Title of the Subject	Teaching Scheme in Periods per Week (60 Mins)					Examination Scheme						
				Lecture	Studio		Pract/ Tutorial/ Seminars	Total	Dur (hrs)	Theory Marks	Prog. /CIE Marks	Term work Marks	Viva Marks	Total	Credits
					Core	Applied									
1	20BDA41	SDC	DIGITAL DESIGN APPLICATIONS	4		5	8	17			50		50	100	13.0
2	20BDA42	SDC	PRESENTATION SKILL	3	3	3		9				50	50	100	9.0
3	20BDA45	SDC/OE	ELECTIVE	1			2	3			50	50		100	2.0
4	20HAP46	GE	SOFT SKILL-TECHNICAL READING, WRITING AND PEER TEACHING	2			2	4	1	25	25	50		100	3.0
5	20HAP47	GE	LIFE SKILL AND PUBLIC SERVICES	2			2	4	1	25	25	50		100	3.0
6	20HAP48	CEA	SPORTS AND CULTURE				2	2			50	50		100	1.0
			Total	**12**	**3**	**3**	**16**	**39**	**2**	**50**	**200**	**250**	**100**	**600**	**31.0**

No. of Subjects/Heads =	**6**	No. of Theory Examinations =	**2**	

BDA= Digital Architectural Subjects; **DRT=** Digital Art Subjects; **DRT=** Digital Art Subjects; **DAE =** Engineering Subjects;   **HAP =** Humanities and Psychology Subjects.

Subject Categories:-   **GE =** General Education;   **CEA =** Cultural & Extracurricular Activities;   **SDC =** Skill Development Components;   **OE =** Optional Elective

Minimum Marks for passing: Progressive Marks **50%,**   Theory marks, Term work marks and Viva marks **40% in each**

Progressive Marks to be awarded by the subject teacher. Term work & Viva Voce examination shall be conducted jointly by one internal & one external examiner appointed by the University.

ACHARYA INSTITUTE FOR INNOVATION AND TRANSFORMATION-MYSURU
SCHEME (2020-2021) OF PROJECT BASED LEARNING AND EXAMINATION OF V SEM
B. (Voc.) Degree - DIGITAL ARCHITECTURE - DA

S N	Subject Code	Subject Category	Title of the Subject	Teaching Scheme in Periods per Week (60 Mins)					Examination Scheme						
				Lecture	Studio		Pract/ Tutorial/ Seminars	Total	Dur (hrs)	Theory Marks	Prog. /CIE Marks	Term work Marks	Viva Marks	Total	Credits
					Core	Applied									
1	20BDA51	SDC	WORKING DRAWINGS AND TENDER DRAWINGS	2		5	8	15			50		50	100	11.0
2	20BDA52	SDC	PROFESSIONAL PRACTICE AND OFFICE MANAGEMENT	1	2	3		6	2	50		50		100	6.0
3	20BDA53	SDC	ENTREPRENEURSHIP AND MARKETING	2		3		5	2	50	25	25		100	5.0
4	20BDA55	SDC/OE	ELECTIVE	1			2	3			50	50		100	2.0
5	20HAP56	GE	SOFT SKILL-TECHNICAL READING, WRITING AND PEER TEACHING	2			2	4	1	25	25	50		100	3.0
6	20HAP57	GE	LIFE SKILL AND PUBLIC SERVICES	2			2	4	1	25	25	50		100	3.0
7	20HAP58	CEA	SPORTS AND CULTURE				2	2			50	50		100	1.0
			Total	**10**	**2**	**3**	**16**	**39**	**6**	**150**	**225**	**275**	**50**	**700**	**31.0**

| No. of Subjects/Heads = | **6** | No. of Theory Examinations = | **4** | |

BDA= Digital Architectural Subjects; **DRT=** Digital Art Subjects; **DRT=** Digital Art Subjects; **DAE =** Engineering Subjects; **HAP =** Humanities and Psychology Subjects.

Subject Categories:- **GE =** General Education; **CEA =** Cultural & Extracurricular Activities; **SDC =** Skill Development Components; **OE =** Optional Elective

Minimum Marks for passing: Progressive Marks **50%,** Theory marks, Term work marks and Viva marks **40% in each**

Progressive Marks to be awarded by the subject teacher. Term work & Viva Voce examination shall be conducted jointly by one internal & one external examiner appointed by the University.

ACHARYA INSTITUTE FOR INNOVATION AND TRANSFORMATION-MYSURU
SCHEME (2020-2021) OF PROJECT BASED LEARNING AND EXAMINATION OF VI SEM
B. (Voc.) Degree - DIGITAL ARCHITECTURE - DA

S N	Subject Code	Subject Category	Title of the Subject	Teaching Scheme in Periods per Week (60 Mins)					Examination Scheme						
				Lecture	Studio		Pract/ Tutorial/ Seminars	Total	Dur (hrs)	Theory Marks	Prog. /CIE Marks	Term work Marks	Viva Marks	Total	Credits
					Core	Applied									
1	20BDA61	SDC	DESIGN PROJECT (THESIS)	3		5	6	14			50		50	100	11.0
2	20BDA62	SDC	ESTIMATION AND COSTING	1	2	3		6				50	50	100	6.0
3	20BDA63	SDC	SPECIFICATION WRITING	1		3		4	2	50	50			100	4.0
4	20BDA64	SDC/OE	PROJECT MANAGENT	2			2	4			50	50		100	3.0
5	20BDA65	SDC	VALUE ENGINEERING DESIGN	4			4	4	1	25	25	50		100	6.0
7	20HAP68	CEA	SPORTS AND CULTURE				2	2			50	50		100	1.0
			Total	**11**	**2**	**3**	**14**	**38**	**4**	**100**	**250**	**250**	**100**	**700**	**31.0**

No. of Subjects/Heads =	**6**	No. of Theory Examinations =	**3**	

BDA= Digital Architectural Subjects; **DRT=** Digital Art Subjects; **DRT=** Digital Art Subjects; **DAE =** Engineering Subjects;   **HAP =** Humanities and Psychology Subjects.

Subject Categories:-   GE = General Education;   **CEA =** Cultural & Extracurricular Activities;   **SDC =** Skill Development Components;   **OE =** Optional Elective

Minimum Marks for passing: Progressive Marks **50%,**   Theory marks, Term work marks and Viva marks **40% in each**

Progressive Marks to be awarded by the subject teacher. Term work & Viva Voce examination shall be conducted jointly by one internal & one external examiner appointed by the University.

SYLLABUS

20BDA11	YEAR:1	SEMESTER:1	SDC	DESIGN PRINCIPLES	CREDITS 2:5:2

CONTACT PERIOD: 11 (2 LECTURE+5 STUDIO+4 PRACTICAL/TUTORIAL /SEMINAR) per week	PROGRESSIVE MARKS:50	VIVA MARKS:50

OBJECTIVES

- Enhancing students to learn from Site visits and case studies of existing buildings relating to the topics taught and dealt with in the lectures and enabling them to apply similar concepts in their design.

- This course will continue to develop the student's comprehension on the nature of contextual and organizational principles that order our surroundings, and to create an appreciation and understanding of how and why these systems are established.

- The objective is to expose the student to working on a digital platform concerning current issues related to design in architecture, and to teach the intrinsic nature of architecture developed through principles based on the design & construction process. These topics are indications of the various value systems that come into play in the contemporary field of architecture. Understanding this and becoming aware that design is a synthetic process that is a balance of many concerns is a major objective of the course.

OUTLINE

UNIT 1

Listing and drawing silhouettes of favourite structures or locations for digital architectural education and becoming an architect. Using a digital interface. Observing the built environment around and experiencing enclosures (field trips)

UNIT 2

Fundamentals of architectural representation. A table (object), a classroom and a staircase (static/transition spaces), pavilion, open/closed spaces, etc. calibrated drawing exercise of familiar objects & spaces.

UNIT 3

Basic form of development and its introduction: additive form, deductive form, harmony, rhythm, contrast, equilibrium and symmetry. Volume and size definitions, ratio of width to height. Research models to explore the concepts of architecture. Using Sketchup, multiple sectional sketches of sample models.

UNIT 4

Introduction of Anthropometry; architecture's association with the human being. Introduction to furniture; the interaction between objects and human bodies. Research and concept portfolio by drawing / representation.

UNIT 5

Human functions and their consequences for the demands of space. Minimum and optimal mono-function regions. Movement and circulation diagrams, user's data. Spatial representations-different behaviors and their relationship to spaces.

METHODOLOGY

Learning through Real life case studies of buildings that are relevant to the topics discussed, Analyzing the pros and cons and incorporating the same digitally on the design project.

OUTCOME

- Design of functional furniture layout, circulation, lighting and ventilation for spaces such as living/dining, bedrooms, in a residence, Architect's office, Doctor's clinic etc,

- Reading, Teaching, Writing Skills to be honed for presenting the final design to the Juror, fellow students and peers.

REFERENCES

1. "Time Saver Standards for Architectural Design Data" by John Hanock
2. "Architectural Graphic Standards" by Ramsay and Sleeper
3. Indian Anthropometric Dimensions for Ergonomic Design Practice by Debkumar Chakrabarti

20BDA12	YEAR:1	SEMESTER:1	SDC	VISUAL GRAPHICS	CREDITS 1:5:0

CONTACT PERIOD: 6 (1 LECTURE + 5STUDIO) per week	TERM WORK MARKS:50	VIVA MARKS:50

COURSE DESCRIPTION: -

This course introduces students to the world of visual and graphic design. Using a variety of tools and software, students are given the chance to build a solid foundation of the elements and principles of design that they have been observing in their case studies. Design has been around for a long time and is everywhere around you. The history of design and its effect on society will be covered before the student dives into working through the design process and creating various forms of graphics. Using traditional, 2- D and 3-D illustration techniques, students will be exposed to state-of-the-art technology in terms of software and machinery (3D printing machines). Exploring the importance of layouts and aesthetics. Throughout the course, students will be given design challenges that incorporates aspects of each unit. A final portfolio will be created by the students which can be taken to the graphic arts community and shared.

OBJECTIVES

By the end of this course, the successful student will be able to:

1) Communicate information and ideas graphically
2) Identify the intentions of a visual design
3) Apply basic principles of graphic design in the documentation of Architectural design case studies.
4) Relate the design elements and principles in a visual design to its history and culture
5) Identify design criterions creatively and efficiently and learn to provide suitable solutions for the same.
6) Apply creativity techniques to create innovative and effective designs
7) Describe considerations for computer design
8) Demonstrate proper use of design machinery
9) Think through the design process and apply knowledge of current technology software and manufacturing machines to produce their finished designs in a safe and ethical manner

OUTLINE

UNIT 1

Design Elements Introduction to visual communication, techniques of representation based on rhythm, harmony, character, balance, concentration, ideograms, scale and proportion perception, through case studies, -Line Weight, Color, Shade & Shadows. Theory of color, Typography.

UNIT 2

Graphical representation Using Sketchup, Mapping from one locality to another 2D and 3D graphical representation

UNIT 3

Scale and Proportion Metaphor in visual representation through natural objects, understanding complexity of forms using graphics and models. Human Scale in Architectural Drawing

UNIT 4

Architectural features, constructed shapes, free-hand perspective sketches. Rendering technique exercises that demonstrate light, shade and shadow on constructed forms. Rendering of vegetation, leaves, water, scenery, human beings, cars, furniture and structures with sufficient foreground and background components.

UNIT 5

Architectural Concepts & Ideation

OUTCOME

Students will develop a portfolio that reflects and intermediate to advanced level of artistic perception, expression, historic and cultural understanding, aesthetic valuing, and an ability to connect their artistic skills to many art related careers, and develop competencies in problem solving, communication, time management and resources. Students are expected to submit acceptable work with accurate drawings in scale and proportion as standardized presentation at the end of academic year.

REFERENCES

1) Francis D.K.Ching, "Architectural Graphics", Van Nostrand Reinhold Co., 1985
2) I.H.Morris, " Geometrical Drawing for Art Students", Longmans (1902)
3) Robert.W.Gill, "Rendering with pen and ink".
4) Shankar Malik, " Perspective & Sciography", 1994, Allied Publisher.

20BDA13	YEAR:1	SEMESTER:1	SDC	MATERIAL AND METHODS OF CONSTRUCTION-I	CREDITS 1:3:0

CONTACT PERIOD: 4(1 LECTURE + 3STUDIO)per week	PROGRESSIVE MARKS:50	THEORY MARKS:50	DURATION OF EXAM:2HRS

AIM

Examine the critical role of materials and methods for the design and construction of buildings. The primary focus is on materials and systems, their properties and connections, and their intrinsic relationship to structural systems and environmental performance.

OBJECTIVES

- Students will learn about various building systems, and how these systems assist in the expression of a design concept, through an examination of precedent projects whose design concepts were generated by material logics and systems. Students will work hands- on with building materials (concrete, wood, metal, etc.) to get an understanding of each material's properties.

- Furthermore, material applications and detailing in structural and non-structural building components are explored

OUTLOOK

UNIT 1

Strength of materials Mechanical Properties (strength, structural performance), Theory of Failure, Stress – strain curve of steel and concrete, Principal stress, Shear stresses, Bulk Modulus, modulus of rigidity, Youngs modulus, Poissions ratio. Non-Mechanical Properties (physical properties, durability).

UNIT 2

Overview of Materials and Building/Structural Types (Current) Substructure, Superstructure, Foundation, Roof, Shell and core, Structural frame, Floor. Individual Building Materials (Manufacturing, Properties, Comparative Behavior, Applications in Construction).

UNIT 3

Alternative materials used in Building construction (composite & monolithic material) gfrp, cfrp, basalt fibers, fabric structures- pvc polyester, ptfe glass, efte foil

UNIT 4

Factors Affecting Choice of Materials and Structural Form. Chemical composition, Engineering properties – strength, toughness, resilience, hardness, stiffness, ductility.

UNIT 5

Create a material portfolio, with details on all its aspects, how it reacts to different climates (can be done on Revit also), the physical sample.

OUTCOME

Students will develop a fundamental understanding of: the relationship of materiality to construction systems and techniques, how building materials are manufactured, and how a material's modular form, dimensions and intrinsic qualities influence the design process. Resulting from this course, students will gain a comparative knowledge of material properties and possible applications in construction and architecture.

REFERENCES

1) Francis K Ching 'Building construction', Wiley; 5 editions (February 17, 2014)
2) R. Barry, "Construction of Buildings" Vol 1., 1999 by Wiley-Blackwell
3) Roy Chudley, "Construction Technology", 3rd Edition, Longman, 1999
4) W.B. Mckay, "Building Construction", Donhead, 2005.

20DAE14	YEAR:1	SEMESTER:1	SDC	SURVEYING & DOCUMENTING	CREDITS 2:0:1

CONTACT PERIOD: 4(2 LECTURE + 2 PRACTICAL/TUTORIAL/SEMINAR) per week	PROGRESSIVE MARKS:50	TERM WORK MARKS:50

AIM

Surveyors have been around for centuries. While their tools and techniques have changed over time the underlying principles of measurement and mapping are still the same today. The advancement of new technology means surveyors can now take measurements and report data with increased speed and accuracy.

OBJECTIVES

1. To determine the relative position of any objects or points of the earth.

2. To determine the distance and angle between different objects.

3. To prepare a map or plan to represent an area on a horizontal plan.

4. To develop methods through the knowledge of modern science and the technology and use them in the field.

5. To solve measurement problems in an optimal way.

OUTLINE

UNIT 1 - GIS

1. GIS Basics Introduction to GIS-Basic spatial concepts-Coordinate Systems-GIS and Information Systems-Definitions-GIS History-GIS Components-Hardware, Devices, Data, Individuals, Methods-Proprietary and open-source software-Data Types-Spatial, Attribute of Attribute Datatatypes-Measurement of Scales/Levels.

2. Database Structures of spatial data -Relational, Object-Oriented-Entities-ER Diagram-Conceptual data models, Abstract and Physical Data Models-Spatial Data Models-Raster Data Structures-Raster Data Compression-Vector Data Structures-Raster vs Vector Models-TIN and GRID Data Models.

3. Data input and topology

UNIT2 - GPS

What is GPS? Brief history of GPS, GPS Services, applications of GPS, accuracy of GPS.
- Using Coordinates to get the latitude and longitude of a place.

- Study of hand held GPS.

- Measurement of latitude, longitude and altitude using hand held GPS.

- Selection and marking of routes using hand held GPS.

UNIT 3 TOTAL STATION

The Surveying Fundamentals. What is the total station? The tasks and applications of a total station in the building industry. Total station-general commands used-set-read distances and angles for instrument planning and setting-reading.

- Measurement of distances and coordinates of given points, using a) Tapes b) EDM c) Total station

- Measurement of altitudes of given elevated points, using total station

- Run a closed traverse using Total station and plotting the traverse

- Setting out procedures using Total stations.

- Determination of areas of field (enclosed three or more points) by total station

UNIT 4 - DRONE

Introduction to UAVs/Drones, Drone Applications, Working Principle and Design, Inertial Measurement Unit, Sensors and Calibration, PID - Implementation and Tuning, Flight controller, Remote Controller, Quadcopter dynamics. Deliverables achieved using a drone.

UNIT 5 - 3D Scanning

LASER SCANNING GOOGLE SURVEY MAPS NSS and EDM (with its high-speed offspring LiDAR and laser scanning)

What is GNSS? Difference between GNSS and GPS. Surveying and Mapping.

OUTCOME

At the end of this course, students will be aware of different instruments , of the latest technology used for surveying and levelling and will be able to examine and record information of a given area of land or building in the case study or site study and document it with all its physical and geographical characteristics using the above mentioned equipments.

REFERENCES

1) https://sites.duke.edu/envgis/tutorials/introduction-to-google-earth/
2) Anita Graser , "Learning QGIS" PAKT open source, 2016.
3) GISP Dr. John Van Hoesen, Dr. Luigi Pirelli, GISP Dr. Richard Smith Jr., GISP Kurt Menke, " A refreshing look at QGIS: Mastering QGIS", PACKT Pub., 2016.
4) Displaying and analysing 3D data in Surfer software.
5) Carson, Tom, Baker, Donna L., "Adobe® Acrobat® and PDF for Architecture, Engineering
6)B C Punmia, " Surveying Volume I", Firewall Media, 2005
7) K R Arora,"Surveying " Standard Book House,7th edition.
8) R. Subramanian, " Fundamentals of Surveying and Levelling", Oxford Uni. Press., 2014.
9) S K Duggal," Surveying", Vol 1, 14th Edition, McGraw Hill Education, 2013.
10) TP Kanetkar, SV Kulkarni, "Surveying and Levelling(Part-1)", PuneVidyarthi Griha Prakashan, 2014.

20BDA15	YEAR:1	SEMESTER:1	SDC/OE	ELECTIVE (on software skill)	CREDITS 1:0:1

CONTACT PERIOD: 4(1 LECTURE + 2 PRACTICAL/TUTORIAL /SEMINAR) per week	PROGRESSIVE MARKS:50	TERM WORK MARKS:50

20BDA15.1 - AUTOCAD

OBJECTIVE

To develop and train students to use computers and digital media as tools to explore, develop, evaluate and present architectural ideas. To equip the student with a range of digital tools and techniques in 2D drafting, 3D modelling, and vector graphics.

OUTLINE

UNIT 1

Introduction to 3D modelling: Latest version of relevant 3D modelling software – software interface, demonstration of 3D modelling commands required to convert 2D project (of 2D drafting) into 3D as a time-problem.

UNIT 2

Simple 3D modelling: Presentation of time problem; drawing quickly with basic shapes in 3D, viewing models in 3D, adding detail to Models in 3D space, use of cameras, material applications. Presenting models.

UNIT 3

Rendering & Visualization: Presentation of time problem, generating 3D Model and introduction to concepts of visualization.

UNIT 4

Introduction to concepts of Building Information Modelling (BIM) using or other relevant BIM software.

UNIT 5

Introduction to appropriate techniques to model walls, insert fenestration, curtain walls & staircases. Lecture and Classroom exercise to convert into BIM project, relationship of other Industry standard file types (.dwg for AutoCAD). Lecture and Classroom exercise to further utilize rendering and visualization

OUTCOME

At the end of this course, students will be aware of different tools used in the software and will be able to present time problems by generating 3d models utilizing rendering and visualization and create a BIM project.

REFERENCES

1. Website and training material of relevant Image/Graphics editing software
2. Learning resources on Building Information Management (BIM).
3. Vast amount of CAD learning resources available on the Internet.
4. Vast amount of learning resources for Graphics editing tools available on the Internet.

20BDA15.2 – SKETCHUP

OBJECTIVE

To develop and train students to use computers and digital media as tools to explore, develop, evaluate and present architectural ideas. To equip the student with a range of digital tools and techniques

- Begin by drawing lines and shapes and then push and pull surfaces to turn them into 3D forms before stretching, copying, rotating, and painting to make any product

- Turn 3D models into drawings

- Find 3D models in 3D Warehouse, the world's largest library of free 3D models

Unit1 :Introduction

Installing SketchUp Starting SketchUp for the first time Using the exercise files Tips for Mac users Getting to Know the Interface Interface basics Adding toolbars Navigating Changing perspective Walking around Creating camera views Shading faces and edges Creating shadows and fog Creating Scenes Setting preferences Manipulating Objects Selecting and moving objects Scaling and rotating objects Manipulating faces and edges Advanced selection tools

Unit 2

Drawing Line tool fundamentals Refining objects with the Line tool Using the Rectangle tool Pushing and pulling faces into 3D Creating circles and polygons Creating arcs Using the Offset tool to create outlines Using the Follow Me tool Softening round edges Creating 3D text Measuring and Labeling Using the Tape Measure tool Using the Protractor tool Creating text labels Using the Dimension tool Creating sections

Unit 3

Working with Components The Component window Creating components Using the 3D Warehouse Importing from Google Earth Using the Interact tool Using the Component Options window Organizing Scenes Grouping objects Working with layers Creating layers Using the Outliner Hiding and unhiding objects Locking and unlocking objects

Unit 4

Creating Textures and Materials Using the Materials Browser on a Mac Applying materials Editing materials Creating materials Adjusting materials Applying bitmap images Mapping curved objects Projecting maps on curved objects Importing floor plans Modeling with floor plans Rendering and Animating Outputting 2D bitmaps Basic animation Advanced animation

Unit 5

Creating Terrain Using Sandbox Creating terrain from contours Modeling objects with contours Creating terrain from scratch Sculpting with the Smoove tool Stamping and draping objects on the terrain Using Photo Match and Google Earth Geolocation with Google Maps Using Photo Match to align cameras Modeling in Photo Match SketchUp Pro: Working with the Solid Tools Creating Solids Using Boolean operations (Union, Intersect, Subtract) Working with Trim and Split Creating outer shells

OUTCOME

At the end of this course, students will be aware of different tools used in the software and will be able to present time problems by generating 3d models utilizing rendering and visualization and create a BIM project.

REFERENCES

1. Website and training material of relevant Image/Graphics editing software
2. Learning resources on Building Information Management (BIM).
3. Vast amount of CAD learning resources available on the Internet.
4. Vast amount of learning resources for Graphics editing tools available on the Internet.

20BDA15.2 - FUSION360

OBJECTIVE

To develop and train students to use computers and digital media as tools to explore, develop, evaluate and present architectural ideas. To equip the student with a range of digital tools and techniques

- Design, test, and fabricate in a single tool
- Work anywhere, any time
- Collaborate with anyone
- Quickly iterate with sculpting tools to explore form and modeling tools to create finishing features
- Test fit and motion, perform simulations, create assemblies, make photorealistic renderings, and animations while you engineer and simulate with Fusion 360
- Collaborate and manage – Create tool paths to machine your components or use the 3D printing workflow to create a prototype

OUTLINE

Unit 1 :

Introduction to Autodesk Fusion 360 Fusion 360 Fundamentals Getting Started The Fusion 360 Interface Design Navigation & Display Chapter Creating the First Feature with Quick Shapes Design Units and Origin Quick Shape Creation Chapter Creating Sketched Geometry Introduction to the Sketching Workflow Sketch Entities Dimensioning Sketch Constraints Extruding a Sketch Revolving a Sketch Chapter

Unit 2

Additional Sketching Tools Additional Entity Types Editing Tools Additional Dimension Tools Moving and Copying Rectangular Sketch Patterns Circular Sketch Patterns Chapter Sketched Secondary Features Sketched Secondary Features Using Existing Geometery Chapter Pick and Place Features Fillets Chamfers Holes Editing Pick and Place Features Chapter Construction Features Construction Planes Construction Axes Construction Points Chapter Equation and Parameters Equations Parameters Chapter

Unit 3

Additional Features and Operations Draft Shell Rib Split Face Scale Thread Press Pull Chapter Design and Display Manipulation Reordering Features Inserting Features Suppressing Features Measure and Section Analysis Direct Modeling Chapter Single Path Sweeps Sweeps Loft Features Lofts Feature Duplication Tools Mirroring Geometry Patterning Features Chapter Distributed Design Assembly Design Methods Distributed Design Joint Origins Assigning Joints Chapter

Unit 4

Component Design Tools Rigid Groups Interference Detection Miscellaneous Joint Tools Chapter Multi-Body Design Multi-Body Design Multi-Body Design Tools Components As-Built Joints Chapter Editing Sculpted Geometry Introduction to the Sculpt Environment Surface Quick Shapes Creating Sketched T-Spline Surfaces Creating Faces & Filling Holes Chapter Editing Sculpted Geometry Editing from Geometry Deleting Entities Working with Edges Working with Faces Working with Points Controlling Symmetry Thickening Geometry Chapter

Unit 5

Drawing Basics Creating a New Drawing Additional Drawing Views Exploded Views Manipulating

Drawings Chapter Detailing Drawings Dimensions Other Annotations Parts List and Balloons Annotation and Dimension Settings Drawing Output Chapter Static Analysis Using the Simulation Environment Introduction to the Simulation Environment Setting up a Structural Static Analysis Setting up the Mesh Solving a Design Study Visualizing the Results Appendix A: Outputting for 3D Printing Generating a .STL file

OUTCOME

At the end of this course, students will be aware of different tools used in the software and will be able to present time problems by generating 3d models utilizing rendering and visualization and create a BIM project.

REFERENCES

1. Website and training material of relevant Image/Graphics editing software
2. Learning resources on Building Information Management (BIM).
3. Vast amount of CAD learning resources available on the Internet.
4. Vast amount of learning resources for Graphics editing tools available on the Internet.

B.(Voc.) Degree-(DIGITAL ARCHITECTURE)-B. DArch. DETAILED SYLLABUS

20HAP16	YEAR:1	SEMESTER:1,2,3, 4,5	GE	S O F T S K I L L - T E C H N I C A L READING, WRITING, AND PEER TEACHING	CREDITS 2:0:1

CONTACT PERIOD: 4(2 LECTURE + 2 PRACTICAL/TUTORIAL / SEMINAR) per week	PROGRESSIVE MARKS:25	THEORY MARKS: 25	DURATION OF EXAM:1HRS	TERM WORK MARKS:50

OBJECTIVES

- To develop the ability to collaborate with colleagues is an important soft skill for graduates to possess. Engaging students in group projects to help develop soft skills such as collaboration, teamwork and empathy, and provide a bit of structure when it comes to assessing them.

- To nurture the attributes such as character traits, attitudes, and behaviors that help students adapt to new jobs, overcome obstacles, develop productive relationships with their peers, co-workers and supervisors, and thrive in the workplace.

- To help students become aware that the soft skills that can help them to succeed in the college classroom will also be those they will need to enter and thrive in the workplace after they graduate.

- Soft skills and technical reading, writing and peer teaching will continue to be practiced for the entire 6 semester span as it develops and improves over a period of time by regular practice.

OUTLINE

UNIT 1

Documenting a building, in a descriptive manner, a formal analysis of a building which entails the use of technical terminology necessary for verbal and written communication.

UNIT 2

Essays on the history of architecture and in design descriptions and explanations.

UNIT 3

Extempore speech where in topics will be given to the students and they would have to speak about the given topic in short time. This is to assess and improve their oral skills.

UNIT 4

Writing proposals for design, Memoranda, Writing an e-mail to a client

UNIT 5

Planning reports and description for design, Articles on describing buildings built by architects, Delivering oral and written presentations of posters and designs

OUTCOME

The student will make a portfolio comprising of:

(a) An introduction about 'me', that includes information about their personal background, educational aspirations and outlook into their future goals, they can introduce their works to the reader.

(b) Students will design a Digital portfolio to showcase their visual graphics, design and writing assignments.

(c) The student will be assigned a peer to evaluate and give constructive criticism to the same.

(d) Students will be given opportunities to educate lower semesters, by taking classes for the same, as teaching assistantship.

(e) The student will present their portfolio to the class and explain the same, which will enhance their verbal communication skills.

(f) Students will learn to work comfortably in teams with strategic planning and resolve disputes in an amicable manner.

(g) Intercultural competence will be encouraged in a positive way as students with different cultural backgrounds interact with each other.

(h) Students will tactfully manage difficult conversations coming up as a result of varied topics and learn to answer to them with empathy.

REFERENCES

1. A K Jain, A M Sheikh & Pravin S R Bhatia," Professional Communication Skills", S. Chand Publishing, 2001
2. Jones Leo , "Working in English: Teachers Book", Cambridge University Press, 2001.
3. Marsha J. Ludden, "Effective Communication Skills", Jist Works; 2 edition, 2001
4. Mudambadithaya G.S , "Communicative English for Professional Courses", Sapna Book House, 2002.
5. Taylor, Grant , "English Conversation Practice", McGraw Hill Education; 1 edition, 2001.

20HAP17	YEAR:1	SEMESTER:1,2, 3,4,5	GE	LIFE SKILL AND PUBLIC SERVICE	CREDITS 2:0:1

CONTACT PERIOD: 4(2 LECTURE + 2 PRACTICAL/TUTORIAL / SEMINAR)per week	PROGRESSIVE MARKS:25	THEORY MARKS: 25	DURATION OF EXAM:1HRS	TERM WORK MARKS:50

AIM

Life skills directly influence student's careers and lives. Both UNESCO and WHO have listed major life skills. For being cognizant of their own as well as others' emotions, students must be in a position to empathize, communicate, and overcome challenges. Adjusting emotions as per the changing situations is the key to win-win outcomes.

OBJECTIVES

UNIT 1

Interpersonal skills:
By engaging themselves in design experiences, students may present their interpersonal skills. Listening closely to their faculty and friends and connecting with them and building a positive friendship will go a long way to ensuring the success of people and teams.

UNIT 2

Resilience:
It is unavoidable to suffer mistakes. Nevertheless, perceiving mistakes as stepping stones and learning from them will undoubtedly assist in the improvement and growth of the student, this is done by design crits with eminent industry faculty practicing, who can critique the works of the student and establish the tolerant mindset. Feedback reception to enhance: This is an important part of the learning and development experience of the student. Students should be open to constructive criticism as this keeps them from being complacent and allows one to look sideways to address the problem.

UNIT 3

Cross-cultural sensitization:
It is compulsory for any student to engage in social services such as NSS, NCC, Bharat scouts and guides, NYKS, Air Force, Army and Navy, as this helps to foster harmony and a sense of belonging in the work world by returning to society.

UNIT 4

Time management:
As any task is time-bound in a fast-paced business environment, our progress depends to a great degree on our ability to effectively handle time. Our time management ability will be reflected in striking a study-life balance, grappling with managing schedules, coping with shifting interests, etc., and splitting the time between professional, social and physical activity will be a priority. Decision-making capability: To make a confident decision, it requires an analytical mind, information processing capacity and a rational judgement. This characteristic becomes increasingly more important for their position as one scales up the corporate ladder.

UNIT 5

Technical savviness:
It is imperative that students step up their understanding of technology as technology becomes an integral part of our life. Since our entire syllabus is focused on digitizing the education system, it is often helpful to be familiar with certain theoretical methods as well, aside from being well-versed with the technologies associated with their scope of work.

OUTCOME

- At the end of the such public service initiatives students are trained to lead a program and make quick decisions,

- Trained to equip volunteers with minimum required skills to carry out programmes.

- Equip themselves to work with others comfortably.

- Students would have learnt several other values such as selflessness, honesty, discipline, hard work and ways to build self-confidence and gain leadership qualities.

REFERENCES

1)Life Skills Education Dr. K Ravikanth Rao,Dr. P Dinakar
2)Life Skills" Dr. Ali Khwaja.

20HAP18	YEAR:1	SEMESTER:1, 2,3,4,5	CEA	SPORTS AND CULTURE	CREDITS 2:0:1

CONTACT PERIOD: 4(2 LECTURE + 2 PRACTICAL/TUTORIAL /SEMINAR) per week	PROGRESSIVE MARKS:50	TERM WORK MARKS:50

AIM

The positive impact of sports stretches far beyond the physical. Exercise and sporting activity can have significant knock-on effects on other areas of a student's academic performance. Our aim is to encourage students to engage themselves in a mainstream sports activity or cultural activity like dance to keep the students physically fit and give themselves an adrenaline rush to improve their divergent thinking and enhance them to think out of the box.

OBJECTIVES

Engage in any one or more sports activity or cultural activity, it can be any form of dance or martial art for a prescribed period of time on a daily basis.
To maintain a healthy BMI, that will be monitored on a timely basis and credits will be provided for the same.

OUTCOME

1) To achieve the following through the chosen sport-
2) Stay fit and healthy
3) Boost self-esteem
4) Reduce stress
5) Improve sleep
6) Develop leadership skills
7) Instill patience, discipline and perseverance
8) Credits will be given for well-maintained Body Mass Index achieved through sporting and cultural activities
9) Students will have to participate in any 2-district level, state level or national level competitions
10) This will lead to improved physical health, mental health, enhance team spirit and be a great stress buster.

| 20BDA21 | YEAR:1 | SEMESTER:2 | SDC | DIGITAL DESIGN PRINCIPLES | CREDITS 2:5:2 |

| CONTACT PERIOD: 11 (2 LECTURE+5STUDIO+4 PRACTICAL/TUTORIAL /SEMINAR) per week | PROGRESSIVE MARKS:50 | VIVA MARKS:50 |

OBJECTIVES

To explore the inter-relationships between the contemporary mediums of digital design to digital production

OUTLINE

The studio will focus on parametric design process and will demonstrate link between the employment of advanced Digital design tools and the realm of digital fabrication through a product design within an Architectural domain that will augment the character of a specific built environment.

UNIT 1

Investigation into the inter-dependencies amongst definite factors like human ergonomics, explicit site information, specific programmatic data and the immediate environment and their analysis and synthesis.

UNIT 2

Detailed digitized resultants of this analysis to be used as input parameters whose permutations and combinations that will facilitate the generation of different iterations for Product morphologies.

UNIT 3

Advanced digital fabrication tools would be engaged to test the performative capabilities of one specific selection generated through the iterative process.

UNIT 4

The methodologies to explore the inter-relationships between performative designs, solid modelling and computer numerically controlled fabrication.

UNIT 5

Preparation of project report inclusive of all the details discussed in the previous units and details for one of the project could include a case study documentation of the project proposed for the design intervention

OUTCOME

Students will work on analytical and design projects of product design scale and produce the work in the following form: -
Complete documentation with all necessary design abstracts, process trajectory, digital models, diagrams, drawings, illustrations & text in a printed format as well as a soft digital.Scaled model of the complete project.

B.(Voc.) Degree-(DIGITAL ARCHITECTURE)-B. DArch. DETAILED SYLLABUS

NOTE

The portfolio covering all the assignments shall be presented for term work.

REFERENCES

1) Mark Burry; Scripting Cultures
2) Casey Reas and Chandler McWilliams; Form+Code in Design, Art, and Architecture
3) Kostas Terzidis ; Algorithmic Architecture
4) D-Arcy Wentworth; On growth and form
5) John Frazer; Evolutionary architecture
6) Philip Ball ; Shapes: Nature's Patterns; A Tapestry in Three Parts
7) Tomoko Sakomato ; From control to Design.

| 20BDA22 | YEAR:1 | SEMESTER:2 | SDC | STRUCTURES 1 | CREDITS 1:5:0 |

| CONTACT PERIOD:6(1 LECTURE + 5STUDIO) per week | TERM WORK MARKS:50 | VIVA MARKS:50 |

OBJECTIVES

- Understanding of basic theories and principles of structural analysis from real life projects

- Understanding of properties of materials relevant to structural analysis of the building.

- Understanding of behaviour of structural elements under various conditions.

- Understanding various concepts about structures as tall, long, thin, wide etc.

- Understanding Articulation of structural systems from foundation to roof Understanding the following:

1) Properties of section
2) Stress and strain:
3) Shear force and bending moment
4) Theory of simple Bending

OUTLINE

UNIT 1

Learning and detection of force position, bending moment and bending stress in fixed beams, over hanging beams, continuous beams, portal frames, etc. Combined bending and direct stresses, eccentricity effect of axial and eccentric loads, e.g., g. Wall of Masonry, Chimney. Stresses in Beams Basic bending of beams, Segment module, Resistance moment, Shear stress in beam section.

UNIT 2

Deflection in simply supported beams and cantilevers with distributed and point loads. (Introduction, Calculation of slope and deflection by Double Integration, Macaulay's Method, and Moment area Method. Conjugate beam method).

UNIT 3

Columns, purpose of providing the coloumns, location and orientation of the coloumn and struts- short and long columns, slenderness ratio etc. Axially loaded coloumn, Coloumn with uniaxial excentric loading, Coloumn with biaxial excentric loading, effective length of coloumn with respect to different end condition

UNIT 4

Shear Force and Bending Moments Beams shearing force and bending moment, Determination of positive and negative bending moments and shear force in fixed, cantilever and simply supported beam, and overhanging beam. (confine the loading to point and UDL covering full span only). Continuous beams – negative and positive bending moments in continuous beams covering two or

more spans of uniform section and simple loading by moment distribution method. Symmetrical Portal frames.

UNIT 5

Design of tensile structures, cable structures, fabric structures and using new techniques such as bamboo as reinforcement is also to be studied.

OUTCOME

Students will analyses the documented structure and reproduce it using Revit structure, they will also have a vivid picture on how these structural members can be employed in their designs, based on load calculation of different members and produce it in digital format.

REFERENCE BOOKS

1. Nautiyal B. D., "Introduction to Structural Analysis", B.H.U.
2. Punmia P. C., "Strength of Materials & Mechanics of Structures".
3. Khurmi R. S., "Strength of Materials".
4. Senol Utku , "Elementary Structural Analysis".
5. Rama Armarutham S., "Strength of Materials"

20BDA23	YEAR:1	SEMESTER:2	SDC	MATERIAL AND METHODS OF CONSTRUCTION-II	CREDITS 1:3:0

C O N T A C T P E R I O D:4 (1 LECTURE+ 3STUDIO) per week	PROGRESSIVE MARKS:50	T H EO R Y MARKS:50	DURATION OF EXAM:2HRS

OBJECTIVES

1. To help students understand the basic building elements, their strength, their function and behavior under various conditions with specific reference to 'Load bearing Construction' and simple non RCC frame structure.
2. To help students to develop a clear understanding of the basic principles of construction and materials suitable for Indian conditions by analysing properties of materials and their response to different climates.
3. To help students develop an analytical and logical sequence in thinking.
4. To encourage students to work in sites in order to get the practical exposure and design accordingly in classrooms.
5. To Understand the availability of locally available materials for sustainability.

OUTLINE

UNIT 1

Introduction to various components of building such as roofing, slabs, different types of slabs beams different kinds, columns different kinds and types of foundation.

UNIT 2

Study of Building components. Superstructure a Load bearing / non load bearing masonry construction using conventional materials such as stone, bricks, wood and innovative materials viz, steel, carbon steel, cement concrete blocks, wood, stabilized mud blocks, locally available or newly introduced in the market shall be studied.

UNIT 3

Foundations :
Strip foundation suitable for load bearing structure in stone and brick up to plinth level including plinth formation, P.C.C. coping (reinforced and un-reinforced) to act as damp proof course. Foundation for brick pillars, plasters, entrance, steps etc.

UNIT 4

Detailed study on Precast and Prefabricated construction methods. Introducing to prestressing and post tensioning of building components, such as floor, slab, beam, Prestressed concrete

UNIT 5

Preparation of project report inclusive of all the details discussed in the previous units and details for one of the project could include a case study documentation of the project proposed for the design intervention

OUTCOME

Students will learn the above-mentioned topics through site visits to understand the basics of construction technology and will further document the observed technologies as detailed drawings on a digital platform. They will make a portfolio towards the end of the semester on completion of all the above discussed topics.

REFERENCE

1. Building construction by Mckay W. B., Vol. 1 to 4
2. Construction of Building by Barry, Vol. I to V
3. Construction Technology by Chudley R. Vol. I to IV
4. Building Construction Illustrated – Ching Francis D. K.
5. Elements of structure by Morgan
6. Engineering Material – Chaudhary 2. Building Construction Materials – M. V. Naik.

20DAE24	YEAR:1	SEMESTER:2	SDC	N A T I O N A L A N D R E G I O N A L BUILDING CODE	C R E D I T S 2:0:1

CONTACT PERIOD: 4(2 LECTURE + 2 PRACTICAL/TUTORIAL /SEMINAR)per week	PROGRESSIVE MARKS:50	T E R M W O R K MARKS:50

OBJECTIVE

To introduce the students to the National building code and educate them on how to follow guidelines that regulate the building construction activities.

Introducing the students to development control rules and general building requirements, fire safety requirements, stipulations regarding materials, structural design and construction (including safety), building and plumbing services, approach to sustainability, and asset and facility management

OUTLINE

UNIT 1

Integrated approach- a pre-requisite for applying the provision of the code Definitions Administration. Scope, terminology, applicability of the code, interpretation, alternative materials, methods of design and construction, and tests, department of buildings, power and duties of team of building officials, board of appeals, violations and penalties, power to make rules

UNIT 2

Development control rules and general building requirements. Land use classification and uses permitted, means of access, community open spaces and amenities, classification of buildings, area and height limitations, greenbelts, landscaping and water conservation, requirements of parts of buildings, special requirements of low-income housing in urban areas

UNIT 3

Fire and lift safety. Fire prevention, life safety, fire protection, additional occupancy wise requirements, Approach to sustainability.

UNIT 4

BUILDING SERVICES Lighting and Natural Ventilation, Electrical and Allied Installations, Acoustics, Sound Insulation and Noise Control, Installation of Lifts, Escalators and Moving Walks, Information and Communication Enabled Installations,

UNIT 5

Preparation of project report inclusive of all the details discussed in the previous units and details for one of the project could include a case study documentation of the project proposed for the design intervention

OUTCOME

Students will observe the standards that are adopted by prominent buildings in various fields of residences, retail and hospitality and document them. They will do a thorough study of the

standards set forth by NBC, BIS or any other regional statutory body and adopt the same onto their design thereby creating user defined spaces.

REFERENCES

1. National building code 2006.
2. Bureau of Indian Standards.

20BDA25	YEAR:1	SEMESTER:2	SDC/OE	ELECTIVE (on software skill)	CREDITS 1:0:1

CONTACT PERIOD: 3 (1 LECTURE + 2 PRACTICAL/TUTORIAL /SEMINAR) per week	PROGRESSIVE MARKS:50	TERM WORK MARKS:50

20BDA25.1 – RHINO and GRASSHOPER

OBJECTIVE

Rhino is a powerful design and visualization tool used to create designs and 3D quickly that is precise and looks realistic.Once a model is completed in Rhino, it can then be used with other applications to further enhance a project. Students can create a model and export the file to a CNC machine for prototyping or manufacturing. Or they can render the model and use it on web pages, newsletters, and presentations. Using Rhino plug-ins like Flamingo, Penguin, and Bongo, the student can render, illustrate, and animate the model. In addition, models can be exported to most other design, rendering, and animation software applications.

OUTLINE

Unit 1

Introduction: what differentiates Rhino from other architectural CAD products and examine example uses of Rhino in Architecture. Accuracy Object Snaps Modelling Constraints Advanced Object Snaps Construction Planes Modelling History v Grasshopper Object & Viewport Properties Geometry Types Curves Surfaces Poly-surfaces Extrusions Meshes SubD Topology NURBS Geometry Explained Curve Degree Control Points Knots and Edit Points Point Editing and Rebuilding Analytical v Non-Rational Geometry Evaluation Tools Curvature Graph and G-Con Curvature Analysis Environment Maps and Zebra SubD Degree Equivalent - Advantages and Disadvantages Topology Creased and Smoothed Edges Editing Metaphors NURBS conversion and options

Unit 2

Parametric thinking and modelling introduction using Grasshopper.. Grasshopper Interface, tools and Basic Setup A detailed introduction to Grasshopper's unique visual programming interface will be given including the canvas, tabs and menus. Workflow between Rhino and Grasshopper How to import geometry from Rhino and understanding the key vocabulary such as list, items, branches, path. linking the two platforms through referenced geometry and unlink them through internalising geometry. Data Types and their parameters Understanding the way Grasshopper reads data at inputs, outputs, data manipulation through flatten, graft, simplify, reverse.

Unit 3

Transformation Methods and Vector Geometry Moving, rotating, orienting, using planes or points require an understanding of vectors. List, Data Tree Structure and Data Matching Understanding the logic of data structure. concept of Tree and List, as well as data visualization function. Number Sequences (Series, Range, Random) Being able to replicate operations, using a sequence of

number, allows Grasshopper to generate multiple geometry at once. Use of the mathematical expression editor to manipulate the data and create mathematical graphs.

Unit 4

Data Dynamic Remapping (graph mapper) Number can be manipulated, scaled and remapped in a linear or non-linear way using the graph mapper tool. use mathematical graphs to alter geometry through rotation, scaling and movement. Curves, surfaces and points and their properties (domain, parameters) in the context of 1D, 2D and 3D Space, properties of NURBS curves and surfaces, their domain and reparameterization. Data Tree, Path, Items, Index and Matrix Data Tree structure. trees manipulation through components such as Flip Matrix, List item and shift list. Proximity Based Transformation (attractors) external geometry to influence the dimension of a series of objects in space based on distance.

Unit 5

Grids, Image Sampling Using Data matching and grafting operations, create 2d and 3d grids and link them with images to create informed patterns. Introduction to Panelling for Surfaces Surfaces can be subdivided into smaller panels and volumes. Surface Mapping, Isotrim and box morph, the properties of a surface and explain patterning principles on a surface. Mesh Modelling and Topology Introduction to mesh modelling. meshes properties such as their face topology ,the workflow behind mesh constructions in Grasshopper, Data Visualization (Tags, Gradient Colours). Communicating with Excel through CSV file. Introduction to Galapagos (genetic algorithm)

OUTCOMES

Upon completion of the course, students should be able to:

1. Prepare accurate, organized, efficiently constructed three-dimensional models of objects, architectural forms, and interior spaces.
2. Employ a variety of methods for creating three-dimensional models of objects, architectural forms, and interior spaces, including direct construction within and importing measured drawings and other objects.
3. Manage files and components for archiving and greater efficiency during the model-building process.

REFERENCES

1. Website and training material of relevant Image/Graphics editing software
2. Learning resources on Building Information Management (BIM).
3. Vast amount of CAD learning resources available on the Internet.
4. Vast amount of learning resources for Graphics editing tools available on the Internet.

20BDA25.2 - DYNAMO

Dynamo Studio is a visual programming environment that enables designers to explore parametric conceptual designs and automate tasks.

- Integrate automation into the BIM (Building Information Modelling) process.

- Extend your designs into interoperable workflows for documentation, coordination, and analysis.

- Write code using a simple and powerful scripting interface.

OUTLINE

UNIT 1 :

The Dynamo Primer Introduction What is visual programming? What is dynamo? Dynamo in action Dynamo! Install and start Dynamo The Dynamo User Interface The work area FIRST STEPS The anatomy of visual programs Blocks Wires Dynamo Library Management of programs Managing data with preferences Basic components of programs Data Math Logic Strings Color Geometry for Computational Design

UNIT 2

Key Uses for Dynamo Automate Repetitive Tasks Rule-Based Virtual Design & Construction Creating Complex Geometry Information Exchange (Revit & Excel) Model-based Analysis & Simulation Performance Validation Introduction to Dynamo User Interface, Settings, Navigation Auto vs. Manual Runs Node Search, Watch Node,

UNIT 3

Code Block Wiring techniques Design Script Syntax Custom Packages List Management, Lists of Lists, Lacing Geometry: Vectors, Points, Curves, Surfaces, Solids, Meshes, 3rd Party Adaptive Components & Dynamo Utilizing the Dynamo Player for Revit Overview of Dynamo Discipline-Specific Solutions Solving Complex Design Challenges Prefabrication Means & Methods Process Automation

UNIT 4

Geometry - overview Vectors, planes and coordinate systems Points Curves Surfaces Solid Networks Importing Geometry Design with lists What is a list? Working with lists Lists of lists n-dimensional lists Code blocks and DesignScript What is a code block? DesignScript Syntax Abbreviations Code block functions

UNIT 5

Dynamo for Revit Connection to Revit Select Edit Create Customize Documentation Custom blocks User-defined blocks Creating a User-Defined Block Adding to your library Python Python and Revit Packages Case study on packages: M esh Toolkit Developing Packages Publishing Packages

OUTCOMES

Upon completion of the course, students should be able to:

1. Prepare accurate, organized, efficiently constructed three-dimensional models of objects,

architectural forms, and interior spaces.

2. Employ a variety of methods for creating three-dimensional models of objects, architectural forms, and interior spaces, including direct construction within and importing measured drawings and other objects.

3. Manage files and components for archiving and greater efficiency during the model-building process.

REFERENCES

1. Website and training material of relevant Image/Graphics editing software
2. Learning resources on Building Information Management (BIM).
3. Vast amount of CAD learning resources available on the Internet.
4. Vast amount of learning resources for Graphics editing tools available on the Internet.

20BDA25.2 - RCADEXPRESS

OBJECTIVE

To familiarise the students with CAD-CAM applications: triangulation and isolines, topography, design of furniture, road design, numerical control 2D-3D, mechanical behavior of robots and simulation of metallic part solidification It's highly time saving and easy to learn, enabled with intelligent commands.

OUTLINE

Unit 1

Auto Room Dimensions Auto Flat Numbers Floor Name / Title Auto Staircase Plan & Sections Auto Building Elevation New Auto Building Sections New Window, Box, Fin, Chajja, Quantity Auto Working

Unit 2

Convert Meter to Feet or Update Convert Feet to Meter or Update New Text Rotate & Reverse Internally Column Placing & Numbering Furniture Library Sheets [A0 A1 A2 A3 A4] Electric Layout Built-Up Area Calculations Type 1 New Built-Up Area Calculations Type 2

Unit 3

Plot Area Calculations New Balcony & Terrace Calculations Special Array Filter & Modifications RERA Calculation & Chart Details Room / Area Statement New Color / Layer / Linetype Control Water Sanitation's & Parking Calculations

Unit 4

Calculator Centerline in Few Second's New Wall Centerline in Few Second's New North East Layout Type 1 & 2 Change Colors Center to Center Dimensions Drawing Auto Back-Up Clear Unused Files & History in PC

Unit 5:

OUTCOMES

Upon completion of the course, students should be able to:
Prepare accurate, organized, efficiently constructed three-dimensional models of objects, architectural forms, and interior spaces.
Employ a variety of methods for creating three-dimensional models of objects, architectural forms, and interior spaces, including direct construction within and importing measured drawings and other objects.
Manage files and components for archiving and greater efficiency during the model-building process

REFERENCES
1. Website and training material of relevant Image/Graphics editing software
2. Learning resources on Building Information Management (BIM).
3. Vast amount of CAD learning resources available on the Internet.
4. Vast amount of learning resources for Graphics editing tools available on the Internet.

20BDA31	YEAR:2	SEMESTER:3	SDC	DIGITAL DESIGN APPLICATION	CREDITS 2:5:2

CONTACT PERIOD: 11 (2 LECTURE+5STUDIO+4 PRACTICAL/TUTORIAL /SEMINAR) per week	PROGRESSIVE MARKS:50	VIVA MARKS:50

OBJECTIVE

This unit of study introduces explorative and creative thinking expressed through the application of digital software to design propositions. Students will develop the ability to use digital software for the development and execution of parametrically designed building typology

OUTLINE

UNIT 1

Decoding the method of architectural planning as a system of collective, iterative and evolutionary vectors framework.

UNIT 2

Recognizing and identifying the role of parametric platforms as an effective modelling method that improves the design and implementation process and the role of diagramming in analysis, data mapping and its translation to parametric platforms.

UNIT 3

Construct and chart individual principles of visual contact and performance framed by a project brief.

UNIT 4

Apply vector-oriented modelling applications as design tools to meet design goals. Define and use suitable digital software to perform planned design effects.

UNIT 5

Develop innovative construction results in a digital world in regard to the effective use of parametric software for the design of a type of structure.

SESSIONAL WORK

Students will work on above mentioned in detail and will submit the work in the form of drawings and/ models and supplementary documentation as found suitable to explain the design process and product judiciously.

REFERENCES

1. Tschumi, Bernard ; Notations: Diagrams and Sequences
2. Koolhaas, Rem ; Delirious New York: A Retroactive Manifesto for Manhattan,
3. Fenton, Joseph , Pamphlet Architecture 11: Hybrid Buildings
4. Woodbury, Robert ; Elements of Parametric Design, Routledge New York
5. T schumi, Bernard ; Event Cities 1. Di Mari, Anthiny&Yoo, Nora ; Operative Design: A catalogue of spatial verbs Barios, Carlos ; Parametric Design in Architecture: Fundamentals, Methods, Applications. 1. Oxman, Rivka and Robert ; Theories of the Digital in Architecture, Routledge New York.
6. Stanney K M ; Handbook Of Virtual Environments : Design Implementation And Applications
7. Castle H ;New Structuralism : Desing Engineering And Architectural Technologies.

20BDA32	YEAR:2	SEMESTER:3	SDC	BUILDING SERVICES	CREDITS 1:5:0

CONTACT PERIOD: 6 (1 LECTURE + 5STUDIO) per week	TERM WORK MARKS:50	VIVA MARKS:50

OBJECTIVE

To familiarize the students with Services that are involved in the building to make it more efficient and comfortable.

OUTLINE

UNIT 1

Sanitary and plumbing utilities Introduction to sanitary facilities, types of sanitary facilities, introduction to drainage systems, types of drainage systems, traps - various types used. Two kinds of plumbing systems, septic tank - ventilation systems, inspection chambers/manholes.

UNIT 2

Electricity Electrically services: Basic concepts of electricity: direct and alternating currents Delivery in three phases and single stages Supply of electricity to locations and delivery of electricity to houses. Electrical distribution inside buildings Electrical layouts for enclosed spaces Exposed and uncovered wiring Types of wires Wired accessories Electrical protection principles- Earthing, MCB, ELCB, lightning conductor.

UNIT 3

Lighting Artificial lighting Direct and indirect lighting, Levels of illumination for lamp forms. Acoustics Definition and terms Space Acoustics for lecture halls and auditoriums, propagation and reverberation of sound acoustics.

UNIT 4

Vertical transport system Lifts-carrying capability and travel time, grouping of lifts-requirement for construction Escalators-provision of space and installation specifications Fire protection Analysis of fire regulations, fire safety design consideration. Fire routes of escape. Fire detectors and devices for alerts. Fire Safety and Firefighting Systems, Firefighting Water Supply.

UNIT 5

Ventilation- Mechanical ventilation in homes, Mechanical ventilation in basements. Ventilators, blowers, air filters Air conditioning Principle of the refrigeration cycle and the air cycle Local and central air-conditioning systems Work ducts and air-conditioning configurations Fittings and fixtures.

OUTCOME

At the end of the course, students will be able to create electrical layouts, plumbing layouts using software. They will also be asked to make a portfolio of the studied services.

REFERENCES

1. Water supply and Sanitation by Charanjit Shah.
2. Water supply & sanitary Engineering by S.C.Rangawala
3. Raina K.B. & Bhattacharya S.K., Electrical Design estimating and costing, New Age International (P) Limited, New Delhi,2004.
4. Rudiger Ganslandt & Harald Hofmann, Handbook of Lighting Design, Druckhaus Maack, Lüdenscheid, 1992.
5. Building Services: A Guide to Integrated Design: Engineering for Architect, RP Parlour, 2008, Integral Publishing.
6. National Building Code of India (Latest Edition), Bureau of Indian Standards.

20BDA23	YEAR:2	SEMESTER: 3	SD C	MATERIAL AND METHODS OF CONSTRUCTION-III	CREDITS 1:3:0

CONTACT PERIOD: 4(1 LECTURE + 3STUDIO)per week	PROGRESSIVE MARKS:50	THEORY MARKS:50	DURATION OF EXAM:2HRS

OBJECTIVES

To give knowledge about building finishes.

To introduce the different types of doors, windows, ventilators, etc., in a building and to enable an understanding of their making, fixing and operating mechanisms in different materials- timber, steel, aluminium, PVC/UPVC. To give familiarity about building interior components.

OUTLINES

UNIT 1

BUILDING FINISHES AND NON-STRUCTURAL BUILDING ELEMENTS
Introduction to building finishes. Different types of paints, their composition, characteristics and uses. Types to include enamels, distemper, plastic emulsion, polyurethane, special paints such as fire retardant, luminous and bituminous paints. Preparation of surface and application for different paints/ finishes. Gypsum and POP finishes. Adhesives and sealants. Basic waterproofing of buildings. Understanding of product literature. Understanding construction techniques through site visits/ case studies. Understanding through sketches/product literature/ case studies.

UNIT 2

TIMBERDOORS, WINDOWS AND VENTILATORS
Outline of timber as a material for doors, windows and ventilators (including industrial timber such as plywood, blockboard, particle board, etc.,). Basic components for timber door/ window/ ventilator of different types- outer frame, shutter frame, shutter material, hardware, fixtures, etc., Their joining and fixing procedures, insect screens. Finishing materials and procedures. Drawings/models of the principles. Understanding of detailed drawings/ published work. Site visits with documentation in the form of sketches/ drawings/ photos.

UNIT 3

STEEL, ALUMINIUM AND PVC/ UPVC DOORS, WINDOWS AND VENTILATORS
Outline of steel, aluminium, PVC/UPVC material for doors, windows and ventilators. Comparing their characteristics and context of use. Basic components for door/ window/ ventilator of different types- typical sections for outer and shutter frame, shutter material, hardware and fixtures, etc.,Their joining and fixing procedures, insect screens. Finishing materials and procedures.Sketches/models of the principles. Understanding of product literature/shop drawings. Site visits with documentation in the form of sketches/ photos. Outline of specialised products such as steel rolling shutters and any other innovative methods.

UNIT 4

INTERIOR ELEMENTS
Introduction to building interior elements such as partitions, flooring, false ceiling, panelling, handrails, etc., and their different types. Materials for them- timber, industrial timber, gypsum,

steel, aluminium, PVC/UPVC, glass, etc., Different kinds of systems and methods. Drawings/ sketches of the principles. Understanding of product literature. Site visits with documentation in the form of sketches/ photos.

UNIT 5

Preparation of project report inclusive of all the details discussed in the previous units and details for one of the project could include a case study documentation of the project proposed for the design intervention

REFERENCES

1. Francis, D.K. (2008), "Building Construction Illustrated", Fourth Edition, Wiley India Pvt. Ltd.
2. Mackay, J.K. (2015) – Volume 1, "Building Construction", Fourth Edition, Pearson India
3. Roy Chudley (2015) – Volume 1, "Construction Technology" Second Edition, Pearson India
4. Barry R. (1999) – Volume 3 & 4, "The Construction of Buildings", Fourth Edition, East-West Press Pvt. Ltd., New Delhi.
5. Lyons Arthur (2014), "Materials for Architects and Builders", Fifth Edition, Routledge.
6. Varghese P.C. (2015), "Building Materials", Second Edition, PHI Learning Pvt. Ltd.

20DAE34	YEAR:2	SEMESTER:3	SDC	ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING IN ARCHITECTURAL DESIGN	CREDITS 2:0:1

CONTACT PERIOD: 4(2 LECTURE + 2 PRACTICAL/TUTORIAL /SEMINAR) per week	PROGRESSIVE MARKS:50	TERM WORK MARKS:50

OBJECTIVES

To introduce to students AI and ML concepts and gain application of the principles in real-world scenario.

OUTLINE

UNIT 1

Introduction to AI:
What is AI, Foundations of AI, History of AI, State of the Art Intelligent Agents: Agents and Environment, Good Behaviors, Nature of Environments, The structure of agents. Logical Agents, First order logic, Inference in First order logic.

UNIT 2

Introduction to ML: Machine Perception, Pattern Recognition systems, Design Cycle, Learning and Adaptation. Bayesian Decision Theory: Minimum error rate classification, Classifiers, Discriminant functions & Decision surfaces, Discriminant functions for Normal Density, Maximum-Likelihood estimation, Bayesian Estimation - Gaussian Case, PCA, Fisher Discriminant Analysis. Expectation Maximization.

UNIT 3

K-Nearest Neighbor Estimation and Rule, Metrics and Nearest Neighbor Classification, Support Vector Machines - linear SVM, Slack variables, nonlinear SVMs, Kernel trick, multi-class SVMs.

UNIT 4

Hidden Markov Models – First order HMM, Evaluation, Decoding & Learning, Discrete HMMs and Continuous HMMs, Combining Classifiers: boosting.

REFERENCES

1. "Pattern Classification" by Richard O Duda, Hart, Start (2nd Edition)

2. "Artificial Intelligence: A Modern Approach" by Stuart Russell, Peter Norvig (4th Edition)

3. "Pattern Recognition" by Sergios Theodoridis, Konstantinos Koutroumbas (4th Edition)

4. Machine Learning using Python" by U Dinesh Kumar Manaranjan Pradhan (2019).

B.(Voc.) Degree-(DIGITAL ARCHITECTURE)-B. DArch. DETAILED SYLLABUS

20BDA35	YEAR:2	SEMESTER:3	SDC/OE	ELECTIVE (on VR&AR)	CREDITS 1:0:1

CONTACT PERIOD: 4(1 LECTURE + 2 PRACTICAL/TUTORIAL /SEMINAR)per week	PROGRESSIVE MARKS:50	TERM WORK MARKS:50

OUTLINE

UNIT 1

Introduction to Virtual Reality Introduction, Fundamental Concept and Components of Virtual Reality. Primary Features and Present Development on Virtual Reality. Computer graphics, Real time computer graphics, Flight Simulation, Virtual environment requirement, benefits of virtual reality, Historical development of VR, Scientific Landmark 3D Computer Graphics: Introduction, The Virtual world space, positioning the virtual observer, the perspective projection, human vision, stereo perspective projection, 3D clipping, Colour theory, Simple 3D modelling, Illumination models, Reflection models, Shading algorithms, Radiosity, Hidden Surface Removal, RealismStereographic image.

UNIT 2

Interactive Techniques in Virtual RealityIntroduction, From 2D to 3D, 3D space curves, 3D boundary representation Geometrical Transformations: Introduction, Frames of reference, Modeling transformations, Instances, Picking, Flying, Scaling the VE, Collision detection Generic VR system: Introduction, Virtual environment, Computer environment, VR technology, Model of interaction, VR Systems.

UNIT3

Visual Computation in Virtual Reality:Animating the Virtual Environment: Introduction, The dynamics of numbers, Linear and Nonlinear interpolation, the animation of objects, linear and non-linear translation, shape & object in between, free from deformation, particle system. Physical Simulation: Introduction, Objects falling in a gravitational field, Rotating wheels, Elastic collisions, projectiles, simple pendulum, springs, Flight dynamics of an aircraft.

UNIT 4

Augmented and Mixed Reality Taxonomy, technology and features of augmented reality, difference between AR and VR, Challenges with AR, AR systems and functionality, Augmented reality methods, visualization techniques for augmented reality, wireless displays in educational augmented reality applications, mobile projection interfaces, marker-less tracking for augmented reality, enhancing interactivity in AR environments, evaluating AR systems.

UNIT 5

Multiple Models of Input and Output Interface in Virtual Reality: Human factors: Introduction, the eye, the ear, the somatic senses. VR Hardware: Introduction, sensor hardware, Head-coupled displays, Acoustic hardware, Integrated VR systems. VR Software: Introduction, Modeling virtual world, Physical simulation, VR toolkits, Introduction to VRML, Input -- Tracker, Sensor, Digital Glove, Movement Capture, Video-based Input, 3D Menus & 3DScanner etc. Output -- Visual / Auditory / Haptic Devices. Application of VR in Digital Entertainment VR Technology in Film & TV Production. VR Technology in Physical Exercises and Games. Demonstration of Digital Entertainment by VR.

B.(Voc.) Degree-(DIGITAL ARCHITECTURE)-B. DArch. DETAILED SYLLABUS

OUTCOME

Developing architecture of a house using Virtual Reality. Perform CRO based experiment using Virtual Reality. Undertaking qualitative analysis in Chemistry using Virtual Reality. Carry out assembly/disassembly of an engine using Virtual Reality. Explore human anatomy using Virtual Reality. Simulation of circulation of blood in heart. Simulation of Fight/Vehicle/Space Station. Building Electronic circuit using Virtual Reality, given basic electronic components. Developing concept of Virtual class room with multiplayer.

REFERENCES

- Burdea, G. C. and P. Coffet. Virtual Reality Technology, Second Edition. Wiley-IEEE Press, 2003/2006.

- Alan B. Craig, Understanding Augmented Reality, Concepts and Applications, Morgan Kaufmann, 2013.

- Alan Craig, William Sherman and Jeffrey Will, Developing Virtual Reality Applications, Foundations of Effective Design, Morgan Kaufmann, 2009.

- John Vince, "Virtual Reality Systems ", Pearson Education Asia, 2007.

- Anand R., "Augmented and Virtual Reality", Khanna Publishing House, Delhi.

- Adams, "Visualizations of Virtual Reality", Tata McGraw Hill, 2000.

- Grigore C. Burdea, Philippe Coiffet , "Virtual Reality Technology", Wiley Inter Science, 2nd Edition, 2006.

20BDA41	YEAR:2	SEMESTER:4	SDC	DIGITAL DESIGN APPLICATIONS	CREDITS 4:5:4

CONTACT PERIOD: 17(4 LECTURE + 5 STUDIO +8 PRACTICAL/TUTORIAL /SEMINAR) per week	PROGRESSIVE MARKS:50	VIVA MARKS:50

OBJECTIVE

To explore new limits and possibilities of urban interventions that are assisted by parametric design principles. The aim is to hone and utilize parametric capacities and use them as a powerful tool that augments the multi-layered and collaborative urban design process and helps produce design solutions of greater resilience.

OUTLINE

UNIT 1

Introduction to analytical diagramming/information graphics post mapping for analysis and data representation tool acting at local and urban scale.

UNIT 2

Stakeholder analysis, demographic study, climate studies, socio-economic analysis and related analysis of a wide range of urban forces. Inferences from analysis in terms of Variables, Constraints & Opportunities followed by 'problematization' (identification of key urban issues that need resolution wrt to design brief).

UNIT 3

Development of design agenda and an urban concept that addresses the macro issues followed by a more specific strategy for the site that addresses micro issues/opportunities.

UNIT 4

Introduction of parametric platform as a vector field for site formulation. Design evolution and refinement through selection and iteration within the parametric platform. Refinement and detailing in 3d and Detailing in 2d digital environment modelling environment and Post production and design representation techniques.

UNIT 5

Preparation of project report inclusive of all the details discussed in the previous units and details for one of the project could include a case study documentation of the project proposed for the design intervention

SESSIONAL WORK: Students will work on above mentioned in detail and will submit the work in the form of drawings and/ models that will elaborately explain the complex layering of information post strategizing and the design resolution.

REFERENCES

1. Jacobs, Jane (1961), The Death and Life of Great American Cities, Random House

2. Maas, Winy (2013), MVRDV: Agenda for Urbanism, O10 Publishers
3. Mau, Bruce and Koolhaas, Rem (1998), S,M,L,XL, The Monacelli Press
4. Schumacher, Patrick (2011), Total Fluidity, University of Applied Arts Vienna
5. Maas, Winy (2010), Visionary Cities.

20BDA42	YEAR:2	SEMESTER:4	SDC	DIGITAL PRESENTATION TECHNIQUE	CREDITS 3:6:0

CONTACT PERIOD: 6 (3 LECTURE + 6STUDIO) per week	TERM WORK MARKS:50	VIVA MARKS:50

OBJECTIVE

Learn how to elaborate the presentation of an architectural project starting from 2 classic techniques in the development of a delivery: sketching—or volumetric schemes made by hand—and photographing physical models. See basic drawing, perspective, and photographic technique concepts. Later, see how to edit both drawings and photographs in Adobe Photoshop under the criteria of graphic composition and using techniques such as painting, cropping, color saturation, contrast, textures, and filtering, among others.

OUTLINE

UNIT 1

Introduction Presentation Influences Freehand drawing and model photographs Freehand spatial sketches and diagrams Freehand drawing edit Model photography Mockup photo editing.

UNIT 2

Construct accurate and detailed figures using 3-D modeling software Integrate software to develop and refine presentations of architectural images

UNIT 3

Planimetry and 3D editing in Photoshop Editing 2D plans Axonometric editing (first part) Axonometric editing (part two) 3D editing (part one) 3D editing (part two).

UNIT 4

Final edit / layout Composition of delivery foil Delivery sheet layout in Photoshop. Final project Presentation Technique for Architectural Projects.

UNIT 5

Preparation of project report inclusive of all the details discussed in the previous units and details for one of the project could include a case study documentation of the project proposed for the design intervention

REFERENCES

1. Presentation Technique for Architectural Projects (website: domestica.org).
2. Making Architecture (website:https://www.coursera.org).

20BDA45	YEAR:2	SEMESTER:4	SDC/OE	ELECTIVE (on software skill)	CREDITS 1:0:1

CONTACT PERIOD: 4(1 LECTURE + 2 PRACTICAL/TUTORIAL /SEMINAR)per week	PROGRESSIVE MARKS:50	TERM WORK MARKS:50

SWAYAM is India's national Massive Online Open Courses (MOOC) platform. It offers over 2,150 courses taught by close to 1,300 instructors from over 135 Indian universities and ITs. It allows students in India to earn academic credit online. Since the platform was launched in 2017, over 10 million learners have taken courses on SWAYAM.

SWAYAM is a program initiated by Government of India and designed to achieve the three cardinal principles of Education Policy viz., access, equity and quality. The objective of this effort is to take the best teaching learning resources to all, including the most disadvantaged. SWAYAM seeks to bridge the digital divide for students who have hitherto remained untouched by the digital revolution and have not been able to join the mainstream of the knowledge economy. This is done through an indigenous developed IT platform that facilitates hosting of all the courses, taught in classrooms from 9th class till post-graduation to be accessed by anyone, anywhere at any time.

SWAYAM offers

Best in class Instructors drawn from high-ranked Universities and IITs.
Weekly Assignments to ensure students' progress in a timely manner.
Easy Credit Transfer by complementing students' program
Systematic Approach enabling students towards learning goals

Qualifying Certificates may, in turn, be used by students enrolled in India's higher education to earn academic credit for completing SWAYAM courses earmarked as credit-eligible by their universities. SWAYAM is supported by various industries such and as such the students undertaking the courses will have added advantage of ranking for placements. Laboratory facility will be allotted by the Course Coordinator depending on the available time-slots. For further information about how India is leveraging SWAYAM at the university level, please contact the Course Coordinator in the College and taking his guidance, register for the same.

Some of the suggested courses under SWAYAM for students to choose from are listed below:

1. Design and Analysis of Algorithms
2. Python for Data Science
3. Cloud Computing
4 Deep Learning for Visual Computing
5. Deep Learning for Computer Vision
6.. Artificial Intelligence: Search Methods for Problem Solving
7. Robotics
8. Principles of Management
9. Contemporary Architecture And Design
10.Sustainable Architecture
11.Introduction To History Of Architecture

20BDA51	YEAR:3	SEMESTER:5	SDC	WORKING DRAWINGS AND TENDER DRAWINGS	CREDITS 2:5:4

CONTACT PERIOD: 15 (2 LECTURE+5STUDIO+8 PRACTICAL/TUTORIAL /SEMINAR) per week	PROGRESSIVE MARKS:50	VIVA MARKS:50

OBJECTIVE

Introduction of Working Drawings and Details; Coordination between Architectural, Structural, Services and other disciplines; Preparation of Architectural Working Drawings for a design project.

OUTLINE

UNIT 1

Introduction: Overview of Working Drawings; historical perspective; consultants involved in preparation of working drawings, their role and scope; reading, error checking, problems in working drawings.

UNIT 2

Drafting Conventions: Representation of materials, graphic symbols, line type conventions, grid lines, lettering, color codes, paper sizes, title blocks, office practices, standardization of details.

UNIT 3

CAD Drawings: Working with layers, blocks, templates, assemblies, libraries, layouts, plot styles, error checking, editing.

UNIT 4

Project work: Preparation of Architectural Working drawings and details for one of the design projects of medium rise-framed structure, from earlier semester, like Residence, Primary Health Center or School etc. Alternatively, the design of this project may be taken up at the beginning of the semester in a site measuring 30 m x 40 m or less and within B+G+3 floors.

UNIT 5

Project Work:

Preparation of structural and services drawings and details. Structural drawings: Conventions & symbols; Foundations, Columns, Beams, Slab. Electrical drawings: Conventions & symbols;

Plans at all levels. Water Supply drawings: Conventions & symbols; Plans at all levels. Sanitary drawings: Conventions & symbols; Plans at all levels; Site Plan, Terrace Plan Mechanical drawings: Conventions & symbols; Plans at all levels; Details of Lift. Complete integration of Architectural, Structural and Services drawings and details.

PORTFOLIO

Drawings to include Site Plan, Marking Plan, Plans at all levels, Terrace Plan; all Elevations; two Cross Sections passing through staircase & lift shaft; Profile Sections; Details to include Toilet, Kitchen, Staircase, Door, Window, Railing, Gate, Sky-light.

REFERENCES

1. Engineering Drawing -N.D. Bhatt & V.M. Panchal, 48th edition, 2005 Charotar Publishing House, Gujarat.
2. Engineering Graphics – K.R. Gopalakrishna, 32nd edition, 2005 Subash Publishers Bangalore.
3. Computer Aided Engineering Drawing - by Dr. M H Annaiah, Dr CN Chandrappa and Dr. B Sudheer Premkumar, Fifth edition, New Age International Publishers.
4. ISO:128 Technical drawings — General principles of presentation.

20BDA52	YEAR:3	SEMESTER:5	SDC	PROFESSIONAL PRACTICE AND OFFICE MANAGEMENT	CREDITS 1:5:0

CONTACT PERIOD: 6 (1 LECTURE + 5STUDIO) per week	THEORY MARKS:50	DURATION OF EXAM: 2HOURS	TERM WORK MARKS:50

OBJECTIVES

To understand the responsibilities & liabilities of the Profession. To appreciate the attitude of professionalism.

OUTLINE

UNIT 1

Profession: Idea of profession; differences between profession, trade and business.. Profession of architecture: Types and extent of services offered by architects, scale of fees, stages of payment, and contract between client and architect. Practice: Types of Architectural firms, proprietorship, partnership, associate ship and private limited firms; advantages and disadvantages of each type of firm; building clientele and projects. Office Management: Administration of Architectural firms; basic accounting procedures.

UNIT 2

Code of Professional Conduct: CIAT guidelines and procedure of conduct of competitions.

UNIT 3

Tender: Tender document and its content. Types of tenders, advantages and disadvantages of each type; suitability to various projects. Tender notices, opening, scrutiny, process of selection and award. Architect's role in the tender process. Earnest Money Deposit, Security Deposit, Retention Amount, Mobilization Amount and Bonus & Penalty Clauses. Issues arising out of tendering process and the role of an architect. Contract: General Principles, types of contract; Contract document. Contract Management: Architect's role in Contract Management. Conditions and Scope of Contract; role of an architect in ensuring completion of contract.

UNIT 4

Byelaws: Building byelaws, National Building Code, floor area ratio, floor space index, floating FAR, zoning regulations. Overview of Master Plan/CDP of relevant cities.10. Arbitration: Arbitration and conciliation; arbitrator, umpire, order of reference, selection of arbitrators, powers and duties of arbitrators, arbitration award and implementation of award. Valuation and Dilapidation: Definitions and architect's role in preparation of valuation and dilapidation reports and certifications; Physical and Economic life of buildings. Introduction to Valuation, essential characteristics, classifications and purpose of classifications. Methods of valuation, standard rent and cost of construction.

UNIT 5

Building Industry: General overview of the industry; various participants and dimensions of building industry. Role of architect, employer, and contractor. Types of insurance necessary during contract; fire insurance Easements: easement rights, architect's role in protecting easement rights. Laws related to Property and Land: Land tenure, types of land holdings, land registration,

easement rights, covenants, trespass and nuisance etc. General Law: Overview & definition of common law, statute law, equity, criminal law, civil law etc., Role of courts in dispensing various types of cases. Overview of recent Bills and Acts: Real Estate (Regulation and Development) Act 2016; Land Acquisition Act, Rehabilitation Act and Resettlement Act 2013; Consumer Protection Act. FDI in real estate, goods & service taxes and other taxes applicable in architecture practice and construction industry.

REFERENCES

1) Namavathi, Roshan, Professional Practice for Architects and Engineers, Lakhani Book, New Delhi, 2001.
2) Krishnamurthy K G and Ravindra S V, Professional Practice, S V Ravindra, 2009, Bangalore.

20BDA53	YEAR:3	SEMESTER:5	SD C	ENTREPRENEURSHIP AND MARKETING	CREDITS 2:3:0

CONTACT PERIOD:5(2 LECTURE + 3STUDIO)per week	PROGRESSIVE MARKS:25	THEORY MARKS:50	DURATION OF EXAM:2HRS	TERM WORK MARKS:50

OBJECTIVE

To develop basic understanding about entrepreneurship and marketing, to develop basic entrepreneurial skills, to orient architects for their own venture setup, to boost start-ups.

OUTLINE

UNIT 1

Introduction to entrepreneurship, Benefits, responsibility, design autonomy, financial management, action term.

UNIT 2

Creativity and entrepreneurship Steps in Creativity Innovation and inventions.
Using left brain skills to harvest right brain ideas Legal Protection of innovation.
Skills of an entrepreneur Decision making and Problem Solving (steps indecision making).

UNIT 3

Sole Proprietorship, Partnership, Corporations, LLC/ LLP, Tax Basics, Tax and the Corporation., Licensing & Regulations, Business model, Insurance.

UNIT 4

Project Report, Aspects of a Project, Phases of a Project, Project Report,Contents of a Project Report,Proforma of a Suggested Project Report for a manufacturing Organization, Suggested Readings.

UNIT 5

Analysis with B.E. Point and P/V Ratio Preparation of Cash Budget Problems on Standard Costing Cash Flow Statement Problem as Working Capital Requirement Forecast Problems on Journal & Ledger Suggested Readings.

OUTCOME

After completion of above course, students will be able to.

1. Explain the organizational structure, staffing and leadership processes.
2. Describe the understanding of motivation and different control systems in management. 3. Understanding of Entrepreneurships and Entrepreneurship development process.
4. Summarize the preparation of project report, need significance of report. Also to explain about industrial ownership.

REFERENCES

1. ARCHITECT + ENTREPRENEUR A Field Guide to Building, Branding, and Marketing
2. Your Startup Design Business Eric W. Reinholdt 3
3. Dynamics of Entrepreneurial Development & Management-Vasant Desai,Himalaya
4. PublishingHouse.
5. Entrepreneurship Development – Poornima. M. Charantimath, Small Business Enterprises –
6. PearsonEducation - 2006 (2 & 4) Entrepreneurship Development - S. S. Khanka, S. Chand & Co. New Delhi.

20BDA55	YEAR:3	SEMESTER:5	SDC/OE	ELECTIVE	CREDITS 1:0:1

CONTACT PERIOD: 4(1 LECTURE + 2 PRACTICAL/TUTORIAL /SEMINAR) per week	PROGRESSIVE MARKS:50	TERM WORK MARKS:50

SWAYAM is India's national Massive Online Open Courses (MOOC) platform. It offers over 2,150 courses taught by close to 1,300 instructors from over 135 Indian universities and ITs. It allows students in India to earn academic credit online. Since the platform was launched in 2017, over 10 million learners have taken courses on SWAYAM.

SWAYAM is a program initiated by the Government of India and designed to achieve the three cardinal principles of Education Policy viz., access, equity and quality. The objective of this effort is to take the best teaching learning resources to all, including the most disadvantaged. SWAYAM seeks to bridge the digital divide for students who have hitherto remained untouched by the digital revolution and have not been able to join the mainstream of the knowledge economy. This is done through an indigenous developed IT platform that facilitates hosting of all the courses, taught in classrooms from 9th class till post-graduation to be accessed by anyone, anywhere at any time.

SWAYAM offers:

Best in class Instructors drawn from high-ranked Universities and IITs.
Weekly Assignments to ensure students' progress in a timely manner.
Easy Credit Transfer by complementing students' program Systematic
Approach enabling students towards learning goals

Qualifying Certificates may, in turn, be used by students enrolled in India's higher education to earn academic credit for completing SWAYAM courses earmarked as credit-eligible by their universities. SWAYAM is supported by various industries and as such the students undertaking the courses will have the added advantage of ranking for placements. Laboratory facility will be allotted by the Course Coordinator depending on the available time-slots. For further information about how India is leveraging SWAYAM at the university level, please contact the Course Coordinator in the College and take his guidance, register for the same.

Some of the suggested courses under SWAYAM for students to choose from are listed below:

1. Design and Analysis of Algorithms
2. Python for Data Science
3. Cloud Computing
4. Deep Learning for Visual Computing
5. Deep Learning for Computer Vision
6. Artificial Intelligence: Search Methods for Problem Solving
7. Robotics
8. Principles of Management.
9. Contemporary Architecture And Design
10. Sustainable Architecture
11. Introduction To History Of Architecture

20BDA61	YEAR:3	SEMESTER:6	SDC	DIGITAL ARCHITECTURAL DESIGN PROJECT(Thesis)	CREDITS 1:3:0

CONTACT PERIOD: 6 (1 LECTURE + 5STUDIO) per week	TERM WORK MARKS:50	VIVA MARKS:50

INTRODUCTION:
In principle, the final year Architectural Design Project, positioned at the culmination of multi- year architectural education program, constitutes the threshold between student's academic learning and the profession. It provides an opportunity to do more than demonstrate the accumulated skills and focus on actively engaging with the discipline by contributing new ideas, design solutions or exploring new dimensions to existing or current issues in the field. Ideally, the Architectural Design Project should continue with the Project Proposal submitted during 20BDA61 Thesis Seminar (conducted in the eighth semester) and build/enhance/improve on the architectural narrative that sets the premise for design demonstration.

OBJECTIVES:
a) to demonstrate an ability to comprehend the nature of architectural problem and create a brief which sets the frame work for design.
b) to demonstrate an advanced level design ability to convert the brief set forth earlier into a speculative proposition of design.
c) to articulate and delineate the propositions of design into an architectural solution addressing all the dimensions using diagrams, analog or digital drawings and models.

OUTLINE:
Listed below are a few parameters that could govern, frame and aid in evaluating the projects. These parameters and stages should fine-tuned depending on the resources. It is advised that the projects should be run as a design studio with individual guidance under one or more guides and project coordinator.

(a) Guidelines (scope, scale and limitations):
• All projects should be grounded in some kind of critical enquiry; the depth of enquiry can be extended and the time spent on design can be reduced in a specific case, but such a project should demonstrate clarity in terms of research design. The suggested maximum weightage for study will be 25% in the case of a Study + Design Project.
• Selected projects can be of any scale and size (in terms of built areas) as long as the required rigor and depth is demonstrated by the student to merit consideration as a final project. It is advised not to attempt very large projects that have numerous structures and tend towards repetitive design with minimal variations or very complex projects due to time constraint.
• The scope of the project should firmly be in the purview of architecture even though it can have an interdisciplinary premise. All genre of projects (study or design) should end with a design solution.

(b) Generic studio model highlighting the salient stages
• **Project seminar –** Student shall present a seminar on the project topic which would include the following
1. Precedents of similar projects, either actual visit to such projects or through literature reviews.
2. Cultural, contextual, historical, technological, programmatic concerns of the project.
3. Prevalent or historical models of architectural approach to such projects and a critique of such models
4. A rhetorical or a speculative statement that would be the basis of further investigation. (For example: Architecture in the information age: Design of libraries in the new virtual reality regime). Documentation which is a part of this presentation shall be taken as completion of "case study" part of the final requirement.
• **Mid Review –** There shall be a review to clarify the conceptual statements and assumptions of the students. Students shall present a clearly articulated design response to context, program and users. Conceptual framework and preliminary architectural scheme using drawings and models shall be the end products of this stage.

• **Final Review –** Final review should consist of all the works which would be presented at the viva. Mode of presentation shall be tentative but the body of work presented should demonstrate the intellectual rigour and skill of the student through the design process and must include various iterations (including study models) and the final design outcome. Number of sheets shall be limited to maximum of 20 plus two case study sheets.

(c) Final output/outcomes:

• The final output or body of work should include a report; detailed and completed analog and digital drawings and presentation model.

(d) Project Report:

• Three copies of the reports shall be submitted for evaluation in the Viva. The report in typed or computer printed form shall provide an overview of the entire process from formulation of the project to the design resolution. It should discuss the program, site- analysis, literature review, case studies, design criteria, concept and include detailed design drawings from all stages and photographs of the models.

Note:

a) The requirements pertaining to the differently abled, elderly people and children are to be addressed in design and detailing.

b) At the time of Viva examination, the student shall show to the jurors the portfolio containing the evolution of his/her design from the beginning to the final output. All the drawings and reports shall be certified by the Principal of the School of Architecture as bona fide work carried out by the student during the semester.

SUGGESTED REFERENCES:

All references will be project specific and will include a wide range of subjects (history, theory, services, material and construction) from architecture and allied fields addressed through critical papers, essays, documented studies and books.

20BDA62	YEAR:3	SEMESTER:6	SDC	ESTIMATION AND COSTING	CREDITS 1:5:0

CONTACT PERIOD: 6 (1 LECTURE + 5STUDIO)per week	TERM WORK MARKS:50	VIVA MARKS:50

OBJECTIVE

To develop the necessary skills for establishing and writing specifications based on proposed materials for the preparation of Bill of Quantities leading to cost estimation of proposed architectural works.

OUTLINE

UNIT 1

Types and purpose of estimation. Approximate estimate of buildings. Bill of quality, factors to be considered. Principles of measurement and billing. Contingencies. Measurement of basic materials like brick, wood, concrete and unit of measurement for various items of work. Abstract of an estimate. Costs associated with constructed facilities. Approaches to cost estimation. Type of construction cost estimates. Cost Indices. Applications of cost indices to estimating. Estimate based on engineer's list of quantities. Estimation of operating costs.

UNIT 2

DETAILED ESTIMATE Deriving detailed quantity estimates for various items of work for a single storied building. To include earthwork excavation, brick work, plain cement concrete, reinforced cement concrete works, wood work, iron works, plastering, painting, flooring, weathering course.

UNIT 3

VALUATION Valuation. Explanation of terms. Types of values. Sinking fund. Years of purchase. Depreciation.Types of depreciation. Valuation of real properties. Types, methods and purpose of valuation.

UNIT 4

BUDGETING Elements of cash flow. Time value of money. Capital investment decision. Types of business firms.Budget and Budgetary Control. Types of Budgets. Preparation of financial budget.

UNIT 5

Term project 1:
estimation of Bill of Quantities (BOQ) for Water supply and sanitary works including overhead tanks and Sump tanks.

Term project 2:
estimation of Bill of Quantities (BOQ) for a typical residential layout plan with roads, culverts, pavements, etc.

OUTCOMES

The student will be able demonstrates the following industry-oriented COs associated with the above-mentioned competency:
1. Select the modes of measurements for different items of works.

2. Prepare approximate estimate of a civil engineering works.

3. Prepare detailed estimate of a civil engineering works.

4. Justify the rate for given items of work using rate analysis techniques.

REFERENCE

1. M.Chakraborthi, 'Estimating, Costing, Specification and Valuation in Civil Engineering, Chakraborthi, 2010.

2. B.N. Dutta, 'Estimating and Costing' UBS Publishers and Distributors,2016.

3. S.SangaReddi and P.L.Meiyappan, 'Construction Management', Kumaran Publication, Coimbatore.

4. Gurcharan Singh and Jagdish Singh, 'Estimating Costing and Valuation', Standard Publishers Distributors, 2012.

20BDA63	YEAR:3	SEMESTER:6	SDC	SPECIFICATION WRITING	CREDITS 1:3:0

CONTACT PERIOD: 4 (1 PROGRESSIVE MARKS:50 LECTURE + 3STUDIO)per week		T H EO R Y MARKS:50	DURATION OF EXAM:2HRS

OBJECTIVE

- To enable understanding with respect to quality and quantity of materials, quantity and classes of skilled and unskilled labors, and tools and plants required for projects.

- To give an understanding of how to draw up specifications for the different items of a building Project and also to prepare the schedule of programming of the project.

OUTLINE

UNIT 1

General Requirements, existing conditions, concrete, masonry, metals, wood, plastics, and composites, thermal and moisture protection, openings, finishes.

UNIT 2

Specialties, equipment, furnishings, special construction. conveying equipment, fi re suppression, plumbing, Heating, Ventilating, and Air Conditioning (HVAC).

UNIT 3

Electrical communications, Electronic safety and security, earthwork, exterior improvements Utilities, Transportation, Process integration, material processing and handling equipment, water and wastewater equipment.

UNIT 4

Role of the architect in monitoring the specifications follow-up for quality control, the measurement book (MB), RA bills, interim and final checking and certification of works on site based on the BOQ and terms of contracts.

UNIT 5

Preparation of specification study and details for one of the The minor project could include a case study documentation of the project proposed for the design intervention.

OUTCOMES

The student will be able demonstrates the following industry oriented COs associated with the above mentioned competency:
1.Select the modes of measurements for different items of works.
2.Prepare detailed specification for the projects.

REFERENCES:

1. CSI 3-Part Formatted Specifications (website:arcat.com)
2. Dutta B.N ,Estimating and Costing in Civil Engineering- Theory and Practice, UBS Publishers,1993.
3. Rangwala, Estimating, Costing and Valuation, Charotar Publishing House.

20BDA64	YEAR:3	SEMESTER:6	SDC/OE	PROJECT MANAGEMENT	CREDITS 1:0:1

CONTACT PERIOD: 4 (2 LECTURE + 2 PRACTICAL/TUTORIAL /SEMINAR)per week	PROGRESSIVE MARKS:50	TERM WORK MARKS:50

OBJECTIVE

To enhance the professional ability of the student to manage a construction project by exposing the students to the currently prevalent techniques in the planning, programming and management of a construction project.

OUTLINE

UNIT 1

Introduction to Project, its Stages and Project management: Project,Organisation, need for management of building/construction projects, Principles and Objectives of Project Management, brief understanding about study areas in Project Management. Types of Construction Projects, Life Cycle Stages of a Project (Construction Project).

UNIT 2

Decision making and Feasibility Study: Involvement and Roles of Consultants and Contractor in decision making at various stages. Basic understanding of decision making principles and tools (e.g.Decision Tree, SWOT Analysis, Cost-Benefit Analysis), Value Engineering, Investment Criteria, Project Feasibility Study.

UNIT 3

Computer applications in Project Management: Introduction to use of computers for solving inventory, scheduling and other issues related to construction and management. Roles of Project Manager: Roles & Responsibilities of Project/ Managers,Scope Management in Construction: Scope Planning, Definition, Verification and Control Project Management Stages: Project planning, project scheduling and project controlling.

UNIT 4

Project Scheduling – Bar Chart, Milestone Chart,Network Theories (CPM and PERT analysis) - Event, activity, dummy, network rules, graphical guidelines for network, numbering of events;Project Cost analysis (Indirect project cost, direct project cost, slope of the direct cost curve, total project cost) & brief understanding of about time, cost and resource optimization; Project Crashing (using CPM).

UNIT 5

Project Monitoring and Control – Role of the project manager in monitoring the specifications, Follow-up for quality control, the measurement book (MB), RA bills, interim and final checking and certification of works on site based on the BOQ and terms of contracts. Project updating, Progress Curves.

OUTCOMES

After completion of above course, students will be able to Explain management functions of a manager. Also explain planning and decision making processes. Explain the organizational structure, staffing and leadership processes. Describe the understanding of motivation and different control systems in management. Understanding of Entrepreneurships and Entrepreneurship development process.

REFERENCES

1) Dr. B.C.Punmia et al. "Project planning and control with PERT and CPM", Laxmi Publications, New Delhi
2) S.P.Mukhopadhyay, "Project management for Architects' and civil Engineers", IIT, Kharagpur, 1974
3) Jerome D.Wiest and Ferdinand K.Levy, "A Management Guide to PERT/ CPM", Prentice Hall of India Pub, Ltd.,New Delhi, 1982
4) R.A. Burgess and G.White, "Building production and project Management", The construction press, London,1979.
5) A Guide to Project Management Body of Knowledge; 5th ed. – An American national standard –ANSI/PMI 99 – 001-2004
6) Krishnamurthy K. G., Ravindra S. V., "Construction and Project management for Engineers, architects, planners and Builders", CBS Publishers.

20BDA65	YEAR:3	SEMESTER:6	SDC	VALUE ENGINEERING DESIGN	CREDITS 4:0:4

CONTACT PERIOD: 14 (3 LECTURE + 5 STUDIO +6 PRACTICAL/TUTORIAL /SEMINAR)per week	PROGRESSIVE MARKS:50	VIVA MARKS:50

OBJECTIVE

To offer a plateau for better built environments and to help scientifically criticize and examine the functionality and performance of different building types, elements and systems in relation to quality versus cost.

OUTLINE

UNIT 1

Introduction, Value Engineering Defined, VE History, VE Terminology, VE Benefits, s, Potential VE Applications, Development of Value Engineering Approach.

UNIT 2

Phases of Value Engineering Study, Information Phase, Verb - Noun Approach, Function Relationship, Analytical Phase, Creativity, Function Analysis System Techniques (FAST) Concepts.

UNIT 3

Value Engineering in Architecture, Introduction, Defining Design Objectives Scaling Design Objectives. Weighing Design Objectives Evaluation of Alternatives.

UNIT 4

Preparation of value engineering study and details for one of the The minor project could include a case study documentation of the project proposed for the design intervention.

UNIT 5

Preparation of value engineering study and details for one of the One major project such as Institutional projects like facilities of higher learning, such as, Engineering college campus, medical college campus, management institute campus, hotel management institute, Law college campus, Dental college campus, Nursing college campus, Juvenile Correction Centre, etc.

OUTCOME

At the end of the course, students will be able to perform value engineering studies on various projects.

REFERENCES

2. VALUE ENGINEERING FOR THE PRACTICE OF ARCHITECTURE Husam Akoud
3. Value Engineering Handbook Jay Mandelbaum Danny L. Reed, Project Leader.

20HAP68	YEAR:3	SEMESTER:6	CEA	SPORTS AND CULTURE	CREDITS 2:0:1

CONTACT PERIOD: 4(2 LECTURE + 2 PRACTICAL/TUTORIAL /SEMINAR)per week	PROGRESSIVE MARKS:50	TERM WORK MARKS:50

AIM

The positive impact of sports stretches far beyond the physical. Exercise and sporting activity can have significant knock-on effects on other areas of a student's academic performance. Our aim is to encourage students to engage themselves in a mainstream sports activity or cultural activity like dance to keep the students physically fit and give themselves an adrenaline rush to improve their divergent thinking and enhance them to think out of the box.

OBJECTIVES

Engage in any one or more sports activity or cultural activity, it can be any form of dance or martial art for a prescribed period of time on a daily basis.
To maintain a healthy BMI, that will be monitored on a timely basis and credits will be provided for the same.

OUTCOME

To achieve the following through the chosen sport-

1. Stay fit and healthy
2. Boost self-esteem
3. Reduce stress
4. Improve sleep
5. Develop leadership skills
6. Instill patience, discipline and perseverance
7. Credits will be given for well maintained Body Mass Index achieved through sporting and cultural activities
8. Students will have to participate in any 2 district level, state level or national level competitions
9. This will lead to improved physical health, mental health, enhance team spirit and be a great stress buster.