

DAYANANDA SAGAR UNIVERSITY

SCHOOL OF ENGINEERING



SCHEME  
FOR  
BACHELOR OF TECHNOLOGY (B.Tech.) - 2020

COMPUTER SCIENCE & ENGINEERING

(CYBER SECURITY)

(CSE - CS)

(WITH EFFECT FROM 2020-21)

(I to VIII SEMESTERS)



**DAYANANDA SAGAR  
UNIVERSITY**

## **DAYANANDA SAGAR UNIVERSITY**

(A State Private University under the Karnataka Act No. 20 of 2013)

Approved By UGC & AICTE, New Delhi.

### **VISION**

To be a centre of excellence in education, research & training, innovation & entrepreneurship and to produce citizens with exceptional leadership qualities to serve national and global needs.

### **MISSION**

To achieve our objectives in an environment that enhances creativity, innovation and scholarly pursuits while adhering to our vision.

### **VALUES**

#### **The Pursuit of Excellence**

A commitment to strive continuously to improve ourselves and our systems with the aim of becoming the best in our field.

#### **Fairness**

A commitment to objectivity and impartiality, to earn the trust and respect of society.

#### **Leadership**

A commitment to lead responsively and creatively in educational and research processes.

#### **Integrity and Transparency**

A commitment to be ethical, sincere and transparent in all activities and to treat all individuals with dignity and respect.



# SCHOOL OF ENGINEERING

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(Hosur Main Road, Kudlu Gate, Bengaluru-560 068)

Approved By UGC & AICTE, New Delhi.

### VISION

To transform life through Excellence and Innovation in Engineering Education and Research with an emphasis on Sustainable, Inclusive Technology and Global needs.

### MISSION

To Develop School of Engineering at Dayananda Sagar University, as Center of Excellence by imparting Quality Education and Research to generate highly Competent, Skilled and Humane manpower to face emerging Technological, Scientific and Social challenges with Ethics, Integrity, Credibility and Social concern.

## LEADERSHIPS

Sl. No	Name	Position
1	Dr. D. Hemachandra Sagar	Chancellor, DSU
2	Dr. D. Premachandra Sagar	Pro Chancellor, DSU
	Mr. Galiswamy	Secretary
3	Dr. K.N.Balasubramanya Murthy	Vice Chancellor, DSU
4	Prof. Janardhan R	Pro Vice Chancellor, DSU
5	Dr. Amith R Bhatt	Pro Vice Chancellor, DSU
6	Dr. Puttamadappa C	Registrar, DSU
7	Dr. Uday Kumar Reddy	Dean, SOE, DSU
8	Dr. Banga M K	Dean - Research, DSU
9	Dr. B V N Ramakumar	Professor and Chairman Department of Aerospace Engineering
10	Dr. Jayavrinda Vrindavanam	Professor and Chairman, Department of CSE (Artificial Intelligence and Machine Learning)
11	Dr. Girisha G S	Professor and Chairman, Department of Computer Science and Engineering
12	Dr. Kiran B. Malagi	Professor and Chairman, Department of CSE (Cyber Security)
13	Dr. Shaila S G	Professor and Chairman, Department of CSE (Data Science)
14	Dr M Shahina Parveen	Professor and Chairperson Department of Computer Science & Technology
15	Dr. Theodore Chandra S	Professor and Chairman, Department of ECE
16	Dr. Vinayak B Hemadri	Professor and Chairman Department of Mechanical Engineering
17	Dr. Vasanthi Kumari P	Chairperson & Professor Department of Computer Applications

## **GOVERNING REGULATIONS FOR BACHELOR OF TECHNOLOGY (B. TECH) – 2021**

### **PREAMBLE**

The School of Engineering under Dayananda Sagar University (DSU) provides Science & Technology based education leading to the development of high caliber engineers suitable for Industry and Scientific Organization. The curriculum focuses on knowledge-based course work integrated with skill development as a part of training. It equally helps in inculcating the scientific temper for the lifelong processes of learning. At the Under Graduate level, a candidate goes through the foundation courses in Science, Humanities & Engineering. Each department ensures that the courses cover both the core & electives courses, as required. Provision for Institutional elective help the candidates to acquire interdisciplinary knowledge base or specialize significantly in an area outside the parent discipline

### **DEFINITIONS OF KEY WORDS**

- (i) **Academic Year:** Two consecutive odd, even semesters and a summer term for make up if required.
- (ii) **Course:** Usually referred to as a subject, a course may consist of any of Lecture/Tutorials/Practical /Seminar/Mini project/Project work.
- (iii) **Credit:** A unit by which the course work is measured. One credit is equivalent to one hour of lecture or one hour of tutorial or two hours of laboratory/practical/ workshop practice per week.
- (iv) **Credit Point:** It is the product of grade point and number of credits per course.
- (v) **Cumulative Grade Point Average (CGPA):** It is the measure of overall cumulative performance over all semesters. It is expressed upto two decimal places.
- (vi) **First Attempt:** If a candidate has completed all formalities of academic requirement in a term and become eligible to attend the examinations and attend all the end semester examinations, such attempt shall be considered as first attempt.
- (vii) **Grade Point:** It is a numerical weight allotted to each letter grade on a 10-point scale.
- (viii) **Letter Grade:** It is an index of the performance in a said course. Grades are denoted by alphabets.
- (ix) **Programme:** An educational activity leading to award a Degree or Certificate.
- (x) **Semester Grade Point Average:** It is a measure of performance during a semester. It shall be expressed up to two decimal places.
- (xi) **Transcript:** Based on the grades earned, a grade certificate shall be issued after every semester to the candidate registered
- (xii) **Failure:** It is the case of appearing for Semester End Examinations, but fails to obtain minimum passing marks in Semester End Examinations.
- (xiii) **Detain:** It is the case of not satisfying the eligibility criteria w.r.t Attendance /Internal Assessment in each course to appear for Semester End Examination.
- (xiv) **Audit Course:** A course to be taken by the student without benefit of a grade or a credit.
- (xv) **Not Fit For The Program (NFFTP):** It is the failure of satisfying the criteria laid down by regulations to continue the program of study, which leads to the termination from the University

## **RULES AND REGULATIONS**

- UG 1** All B.Tech programmes offered by the University shall be governed by the DSU B.Tech Rules and Regulations – 2021.
- UG 2** The B. Tech. rules and regulations shall be applicable to any new discipline(s) that may be introduced in future.
- UG 3** A candidate shall become eligible for the award of the B.Tech. Degree after fulfilling all the academic requirements as prescribed by the B.Tech. Rules and Regulations of DSU.

### **UG 4. ELIGIBILITY FOR ADMISSION**

- UG 4.1.** Admission to First Year Bachelor of Technology shall be open to candidates who have passed the second year Pre-University or XII standard or equivalent examination recognized by the University.
- UG 4.2.** The candidate shall have studied and passed English as one of the courses and secured not less than forty five percent (45%) marks in aggregate with Physics and Mathematics as compulsory courses, along with any one of the following courses, namely, Chemistry, Bio- Technology, Computer Science, Biology and Electronics. Eligibility shall be 40% in optional courses in case of candidates belonging to SC/ST and OBC candidates from Karnataka.
- UG 4.3.** Admission to II year /III Semester Bachelor of Technology under Lateral entry shall be open to the candidates who have passed diploma or equivalent
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- UG 4.5.** Diploma candidates seeking admission under Lateral entry shall take up bridge courses as prescribed in the Scheme of Teaching.
- UG 4.6.** Admission to II year /III Semester Bachelor of Technology shall be open to candidates who have passed B. Sc. degree from a recognized University or equivalent as recognized by the University and secure not less than 45% marks in aggregate (including all semesters). Eligibility shall be 40% in case of candidates belonging to SC/ST and OBC candidates from Karnataka.
- UG 4.7.** B.Sc. Graduates seeking admission under Lateral entry shall take up bridge Courses as prescribed in the Scheme of Teaching.

### **UG 5. ACADEMIC SESSION**

- UG 5.1.** Each academic session is divided into two semesters of approximately sixteen Weeks duration and a summer term: an odd semester (August -December), an even semester (January - May) and summer term (Make-up term) June-July.

- UG 5.2.** The approved schedule of academic activities for a session, inclusive of dates for registration, mid-semester and end-semester examinations, vacation breaks, shall be laid down in the Academic Calendar for the session.

## **UG 6. CHANGE OF BRANCH**

- UG 6.1.** Normally a candidate admitted to a particular branch of the undergraduate programme will continue studying in that branch till completion.
- UG 6.2.** However, in special cases, the University may permit a candidate to change from one branch of studies to another after the first two semesters. Such changes will be permitted, in accordance with the provisions laid down hereinafter.
- UG 6.3.** Only those candidates will be considered eligible for change of branch after the second semester, who have completed all the credits required in the first two semesters of their studies in their first attempt, without having to pass any course requirement in the summer term examination.
- UG 6.4.** Applications for a change of branch must be made by intending eligible candidates in the prescribed form. The academic section will call for applications at the end of second semester of each academic year and the completed forms must be submitted by the last date specified in the notification.
- UG 6.5.** Candidates may enlist their choices of branch, in order of preference, to which they wish to change over. It will not be permissible to alter the choices after the application has been submitted.
- UG 6.6.** Change of branch shall be made strictly in the order of merit of the applicants. For this purpose, the CGPA obtained at the end of the second semester shall be considered. In case of a tie, SGPA of second semester followed by SGPA of first semester shall decide the tie.
- UG 6.7.** The applicants may be allowed a change in branch, strictly in order of merit, course to the limitation that the strength of a branch should not fall below the existing strength by more than ten percent and should not go above the sanctioned strength by more than ten percent. The minimum class strength of 75% should be maintained, while considering the change of branch.
- UG 6.8.** All changes of branch made in accordance with the above rules shall be effective from the third semester of the applicants concerned. No change of branch shall be permitted after this.

## **UG 7. COURSE STRUCTURE**

- UG 7.1.** Medium of instruction, examination and project reports shall be in English except in case of any language audit courses.
- UG 7.2.** Teaching of the courses shall be reckoned in credits: Credits are assigned to the Courses based on the following general pattern:
- (a) One credit for each lecture period.
  - (b) One credit for each tutorial period.

- (c) One credit per two hours for each Laboratory or Practical or work shop session.
- (d) Credits for seminar, mini project, project as indicated in the scheme/curriculum of teaching.

**UG 7.3.** In order to qualify for a B. Tech. degree of the University, a candidate is required to complete the credit requirement as prescribed in the scheme/curriculum for a particular programme.

**UG 7.4.** The program of a study consists of the following components:  
(i) Humanities and Social Sciences including Management courses  
(ii) Basic Science courses  
(iii) Engineering Science courses  
(iv) Professional core courses  
(v) Open Electives  
(vi) Project work, seminar and internship  
(vii) Mandatory/Audit Courses

**UG 7.5.** Every B. Tech. Programme shall have a curriculum and syllabi for the courses approved by the Board of Governors. Board of Studies will discuss and recommend the syllabi of all the under graduate courses offered by the department from time to time before sending the same to the Academic Council. Academic Council will consider the proposals from the Board of Studies and make recommendations to the Board of Management and Board of Governors for consideration and approval. For all approved courses, the copyright shall be with DSU.

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## **UG 8. REGISTRATION**

**UG 8.1.** Every candidate is required to register for approved courses through the assigned Faculty Advisor at the end of previous semester or first week of the current semester, as notified by the Academic Calendar.

**UG 8.2.** The Dean may cancel the registration of one or more courses if they are found to violate some rules or if there are restrictions imposed due to disciplinary reasons.

**UG 8.3.** The student is permitted to drop a course/s from the registered courses, within 4 weeks after the start of the Semester/Year as notified in the academic calendar, with the permission of Faculty Advisor and Chairperson / Dean / Principal of the respective School/College and no mention will be made in the grade card for dropped courses.



- UG 8.4.** The student is permitted to withdraw course/s from the registered courses, within 4 weeks before the start of the Semester/Year End Examinations as notified in the academic calendar, with the permission of Faculty Advisor and Chairperson / Dean / Principal of the respective School / College and Grade “W” will be awarded for course/s that were withdrawn.
- UG 8.5.** For the courses with “W” grade, the students should re-register subsequently when offered, either in MOOCS or in-class or summer term and fulfil the passing criteria to secure a grade in that course for change from “W” grade.
- UG 8.6.** Only those candidates shall be permitted to register who have:
- (a) The academic eligibility to move to higher semesters (UG 9 & UG 11)
  - (b) Cleared all University, Hostel and Library dues and fines (if any) of the previous semesters,
  - (c) Paid all required advance payments of University and Hostel dues for the current semester,
  - (d) Not been debarred from registering on any specific ground.
  - (e) A minimum CGPA of 4 in the previous semesters

#### **UG 9. EXAMINATION: ASSESSMENT CRITERIA & ELIGIBILITY FOR PROGRESSION**

Every student shall be assessed for eligibility to higher semester through Continuous Internal Assessment (CIA) and Semester End Examination (SEE) as prescribed.

- UG 9.1.** The Continuous Internal Assessment (CIA), shall normally be conducted by the assessment components spread through the running semester; the components of CIA may be tests, mid-term exam, quiz, term paper, simulation-based problem solving, open-book test, solving open-end problems, mini-projects, seminars, viva-voce, awarding marks for attendance and such activities that enhance original thinking of students. The Course instructor shall announce the detailed methodology for conducting the various components of CIA together specifying component-wise weightages right in the commencement of each semester.
- UG 9.2.** The Semester End Examinations (SEE), shall be conducted at the end of each semester. The SEE components may be a closed or open book examination, project demo, viva-voce, and/or a portfolio presentation.
- UG 9.3.** CIA and SEE shall respectively have 60:40 percent weightage. The Vice-Chancellor, on the recommendations of the Dean of Faculty and Department Chair, in exceptional cases, may approve the variation in this weightage ratio.
- UG 9.4.** The performance of a student with respect to a course in a semester shall be the combined score of marks/points, he/she secures in CIA and SEE, put together. A minimum of securing 40% marks, combining both the CIA with SEE marks secured with respect to a course, shall entail the student a PASS in the course. The Vice-Chancellor, in such cases where the entire class has fared poorly in the course, upon receiving a representation by the students / department, and based on the recommendations of the committee constituted for the purpose, may review the criterion of 40%.

## **UG 9.5. ATTENDANCE ELIGIBILITY**

- UG 9.5.1.** Candidates are required to attend all the classes (Lectures, Tutorials, Practical, Workshop Practice, etc.) for which they have been registered.
- UG 9.5.2.** The candidate shall not be allowed to appear for the end semester examination if his/her attendance falls below 85% in each course and shall be awarded a “NE” grade in that course.
- UG 9.5.3.** A provision for condonation of 10% of the attendance by the Vice-Chancellor on the specific recommendation of the chairman of the department and Dean, showing reasonable cause such as:
- (a) Any medical emergencies/ illness where the candidate requires rest for the specified number of days certified by a Government Doctor only /any death in the family (near and dear ones).
  - (b) If the student represents the University in Sports/ Cultural Activities/Extra-curricular activities/Co-curricular activities.
  - (c) If a student presents a Paper in National/ International Conferences or attends any recognized Workshops/Seminars.
- UG 9.5.4.** If the period of leave is for a short duration (less than two weeks), prior application for leave shall have to be submitted to the Chairman of the Department concerned stating fully the reasons for the leave requested for along with supporting document(s). Such leave will be granted by the Chairman of the Department. However, the student shall comply with 9.5.2 and 9.5.3. of regulations.
- UG 9.5.5.** If the period of absence is likely to exceed two weeks, a prior application for grant of leave will have to be submitted through the Chairman of the Department to the Dean with supporting documents in each case. The decision to grant leave shall be taken by the Dean on the recommendation of the Chairman of the Department. However, the student shall comply with 9.5.2 and 9.5.3. of regulations.
- UG 9.5.6.** It shall be the responsibility of the candidate to intimate the concerned course instructor(s) regarding his/her absence before availing the leave.

## **UG 9.6. CONTINUOUS INTERNAL ASSESSMENT**

- UG 9.6.1.** Candidate shall participate in all components of Continuous Internal Assessment (CIA) to become eligible to take up the Semester End Examination or else ‘NE’ grade shall be awarded. However, the Vice-Chancellor, under exceptional circumstances on the recommendations of Dean of Faculty and Department Chair, may exempt a student from participation in CIA component/s and permit taking up SEE.
- UG 9.6.2.** There shall be no marks improvement of Continuous Internal Assessment; however, the withdrawal and re-registering of the course shall be permitted.
- UG 9.6.3.** Continuous Evaluation consists of:
- UG 9.6.3.1.** Under normal circumstances for theory courses, total CIA weightage shall be a total of 60%, put together all components with varying weightages; Under exceptional

circumstances with the approval of the Vice-Chancellor on the recommendation of Dean of the School, the weightage of CIA may be lower/higher than 60%.

The components of CIA may be tests, mid-term exam, quiz, term paper, simulation-based problem solving, open-book test, solving open-end problems, mini-projects, seminars, viva-voce, awarding marks for attendance and such activities that enhance original thinking of students.

- UG 9.6.3.2.** Under normal circumstances for the practical courses (laboratory, workshops, and any such hands-on activity), total CIA weightage shall be a total of 60%, put together all components with varying weightages; Under exceptional circumstances with the approval of the Vice-Chancellor on the recommendation of Dean of the School, the weightage of CIA may be lower/higher than 60%.

CIA may have components such as conduction of an experiment, record writing, viva-voce, tests, simulation, mid-term exam, quiz, demo, term paper, mini-projects, seminars, marks for attendance and activities which enhances original thinking of students.

## **UG 10. GRADING**

- UG 10.1.** There shall be continuous assessment of a candidate's performance throughout the semester and grades shall be awarded by the concerned course instructor and/or the appropriate committee appointed for this purpose on the following basis.
- UG 10.2.** The grading will normally be based on CIA and SEE.
- UG 10.3.** Practical Courses/ Work Shop Practice: The evaluation will be based on instructor's continuous internal assessment, a test and end semester examination.
- UG 10.4.** The weightage assigned to different components of continuous internal assessment will be announced by the concerned instructor(s) in the beginning of the semester
- UG 10.5.** The results of performance of the candidates in the Continuous Internal assessment Test shall be announced by the instructors.
- UG 10.6.** In case of seminar, evaluation will be as determined by the grade awarding Committee (as per the Program scheme).
- UG 10.7.** Mini project /projects will be based on Continuous evaluation by Guide(s) and Semester End Examination (as per the Program scheme)
- UG 10.8.** The results of performance of the candidates shall be announced by the Controller of Examinations.

## **UG 10.9. METHOD OF AWARDING LETTER GRADES**

- UG 10.9.1.** Relationships among Grades, Grade points and % of marks are listed in Table1.

## **UG 10.10. DESCRIPTION OF GRADES**

- UG 10.10.1.** Table 1 shows the relationships among the grades, grade points and percentage of marks.

**Table 1: Grade, Points, Grade Description and % of marks**

GRADE	GRADE POINTS	DESCRIPTION	% MARKS
O	10	Outstanding	90 to 100
A+	9	Excellent	80 to 89
A	8	Very Good	70 to 79
B+	7	Good	60 to 69
B	6	Above Average	55 to 59
C	5	Average	50 to 54
P	4	Pass	40 to 49
F	0	Fail	< 40
AP	-	Audit Pass	-
AF	-	Audit Fail	-
IC	-	In Complete	-
NE	-	Not Eligible	-
W	-	Withdrawn	-

**UG 10.10.2.** A student will have to ensure a minimum CGPA of 4, to become eligible for the award of the degree.

**UG 10.10.3.** A candidate shall have to repeat all courses in which he/she obtains 'F' Grades until a passing grade is obtained.

**UG 10.10.4.** An IC grade denotes incomplete performance in any Theory and/or Practical Assessment. It may be awarded in case of absence on medical grounds or other special circumstances for SEE. Requests for IC grade should be made at the earliest but not later than the last day of SEE.

**UG 10.10.5.** The student can appear for the course/s with IC grade, when exams are conducted subsequently by the University for those Courses.

#### **UG10.11. EVALUATION OF PERFORMANCE**

**UG10.11.1.** The performance of a candidate shall be evaluated in terms of the Semester Grade Point Average (SGPA) which is the Grade Point Average for a semester, Cumulative Grade Point Average (CGPA) which is the Grade Point Average for all the completed semesters.

**UG 10.11.2.** The Earned Credits (EC) are defined as the sum of course credits for courses in which candidates have been awarded grades between O to P. (Table 1)

**UG 10.11.3.** Points earned in a semester = (Course credits X Grade point) for Grades O - P

**UG 10.11.4.** The SGPA is calculated on the basis of grades obtained in all courses, except audit courses and courses in which F grade or below, registered for in the particular semester.

$$\text{SGPA} = \frac{\text{Points secured in the semester (O – P Grades)}}{\text{Credits registered in the semester, excluding audit}}$$

**UG 10.11.5.** The CGPA is calculated on the basis of all pass grades, except audit courses.

Cumulative points secured in all the passed courses (O – P Grades)

CGPA = .....  
Cumulative registered credits, excluding audit

## **UG 10.12. WITHHOLDING OF GRADES**

**UG 10.12.1.** Grades shall be withheld when the candidate has not paid his/her dues or when there is a disciplinary action pending against him/her

## **UG 10.13. CONVERSION OF CGPA INTO PERCENTAGE**

**UG 10.13.1.** Conversion formula for the conversion of CGPA into percentage is

Percentage of Marks Scored = (CGPA Earned – 0.75) × 10

## **UG 11. PROMOTION CRITERIA AND ENROLLMENTS TO HIGHER SEMESTERS**

**UG 11.1.** During registration to the higher semesters, the following criteria/conditions for promotion, shall be satisfied.

**UG 11.1.1.** A student shall 'Not Eligible' (NE) for writing SEE if he/she does not comply to the minimum prescribed attendance in any course that carry a credit.

Students shall register afresh for such course/s, whenever offered next, to meet the attendance requirements and secure a pass grade, subsequently in that course/s.

**UG 11.1.2.** In a semester (ODD / EVEN), a student is deemed to be Not Eligible (NE) if he/she does not satisfy minimum attendance requirements criteria in a credit course.

If this course happens to be a prerequisite to a connected course in the subsequent semester, then the student shall not be permitted to register for that connected course until he / she secures pass grade in the prerequisite course by complying to the minimum attendance requirement when the prerequisite course is offered next (either during summer term or regular semester).

**UG 11.1.3.** A student shall be permitted to register for FOUR credited courses or to a total of 16 credits whichever is higher along with pending audit courses, if any, during a summer term by paying the prescribed course registration fee per credit notified by the university from time to time.

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**UG 11.1.5.** Candidates who secure 'F' grade in any courses in regular semester or summer term shall secure PASS grade in such course/s either in the subsequent summer term examination or shall repeat in the next appropriate semester whenever it is/they are offered, i.e. odd semester courses during odd semesters examinations and even semester courses during even semester examinations, respectively.

- UG 11.2.** In case of failure in Practical/Workshop practice course the candidate in any semester may clear it in the subsequent summer term examination or semester examination.
- UG 11.3.** In case a candidate fails in Practical/ Workshop practice he/she shall register when it is offered next either in the summer term or subsequent semester, as the case may be.
- UG 11.4.** Candidates may add and drop course(s) with the concurrence of the Faculty Advisor, and under intimation to the concerned course instructors and the academic section provided this is done within the date mentioned in the Academic Calendar.

#### **UG 11.5. SUMMER TERM & MAKEUP EXAMINATIONS**

- UG 11.5.1.** A summer term program may be offered by a department and with the approval of the Dean.
- UG 11.5.2.** Summer term courses will be announced by the Academic Affairs Office at the end of the even semester and before the commencement of the end semester examination. A candidate will have to register for summer term courses by paying the prescribed fees within the stipulated time in the announcement.
- UG 11.5.3.** The total number of contact hours in any summer term program will be the same as in the regular semester course. The assessment procedure in a summer term course will also be similar to the procedure for a regular semester course.
- UG 11.5.4.** Candidates granted semester drop by the Board of Governors, on medical ground, shall be allowed to clear the concerned courses in summer term course and subject to conditions as stated under clauses 11.5.1, 11.5.2.and 11.5.3.
- UG 11.5.5.** The Candidates with “NE” grade shall register for summer term by paying the prescribed fees.
- UG 11.5.6.** Candidates who are awarded ‘F’ grades in regular semester examinations have the option to register for the concerned courses in summer term examinations to the conditions as stated under clauses 11.5.1, 11.5.2.and 11.5.3above, or they can re-sit for subsequent semester/summer term examination only.
- UG 11.5.7.** Provision for make-up exam shall be available to the students who might have missed to attend the Semester / Annual end examinations of one or more courses for exceptional cases arising out of natural calamities / medical emergencies / death of a member in the family, with the permission of Faculty Advisor and Chairperson / Dean / Principal of the respective School/College. All such cases have to be exclusively to be approved by the Vice-Chancellor and ratified in the Academic Council / BOM / BOG. All such courses approved for makeup examinations are awarded a transitory grade “IC” (incomplete grade)
- UG 11.5.8.** The makeup examinations shall be held as notified in the academic calendar or through an exclusive notification duly approved by the Vice-chancellor.

#### **UG 12. DURATION OF THE PROGRAMME**

- UG 12.1.** Normally a candidate should complete all the requirements for under graduate programme in four years. However, academically weaker candidates who do not fulfil some of the requirements in their first attempt and have to repeat them in subsequent semesters may be permitted up to eight consecutive years (from the first year of registration) to complete all the requirements of the degree.
- UG 12.2.** Normally a candidate under lateral entry should complete all the requirements for undergraduate programme in three years. However, academically weaker candidates who do not fulfil some of the requirements in their first attempt and have to repeat them in subsequent semesters may be permitted up to six consecutive years (from the second year registration) to complete all the requirements of the degree.

### **UG 13. TERMINATION FROM THE PROGRAMME**

- UG 13.1.** A candidate may also be compelled to leave the Program in the University on disciplinary grounds.
- UG 13.2.** On having been found to have produced false documents or having made false declaration at the time of seeking admission.
- UG 13.3.** On having been found to be pursuing regular studies and/or correspondence courses (leading to degree or diploma) in any other college, university or an educational institution simultaneously.
- UG 13.4.** On having been found to be concurrently employed and performing duty or carrying out business in contravention to academic schedules of the University and without seeking approval from the University.
- UG 13.5.** If a student fails to earn a pass grade even after 4 attempts such a student is terminated from the university on the grounds of NOT FIT FOR THE PROGRAM (NFFTP).
- UG 13.6.** If a student secures a CGPA less than 4.0, 4 times during entire duration of the program of study, such a student is terminated from the university on the grounds of NOT FIT FOR THE PROGRAM (NFFTP).
- UG 13.7.** However, if the student appeals for reconsideration of termination from the university under NFFTP rule by providing the genuine reasons to the Vice-Chancellor through the Dean of Faculty, then the Vice-Chancellor may consider constituting a committee for the purpose of review and provide 2 additional attempts on the recommendations of the committee.

### **UG 14. TEMPORARY WITHDRAWAL FROM THE UNIVERSITY**

- UG 14.1.1.** He/she applies to the University within at least 6 weeks of the commencement of the semester or from the date he last attended his/her classes whichever is later, stating fully the reasons for such withdrawal together with supporting documents and endorsement of his/her guardian.
- UG 14.1.2.** The University is satisfied that, counting the period of withdrawal, the candidate is likely to complete his/her requirements of the B. Tech. Degree within the time limits specified in Clause 12.1 or 12.2 above.

**UG 14.1.3.** There are no outstanding dues or demands in the University/Hostel/Department/Library.

**UG 14.1.4.** Normally, a candidate will be permitted only one such temporary withdrawal during his/her tenure as a candidate of the undergraduate programme.

#### **UG 15. TRANSFER OF CANDIDATES**

**UG 15.1.** Transfer of candidates from higher education institutions outside University shall be considered at the beginning of Third and Fifth Semesters but subject to confirmation of equivalence.

**UG 15.2.** The candidates shall apply for equivalence with the No-objection for admission to DSU from the University where they are perusing their study.

**UG 15.3.** The candidates must have passed in all courses in the earlier semesters prior to transfer.

#### **UG 16. ELIGIBILITY FOR THE AWARD OF B. TECH. DEGREE**

A candidate shall be declared to be eligible for the award of B. Tech. degree if he/she has:

**UG 16.1.** Completed all the credit requirements for the degree with a CGPA 4.0 or higher at the end of the programme.

**UG 16.2.** Satisfactorily completed all the mandatory audit courses.

**UG 16.3.** No dues to the University, Department, Hostels.

**UG 16.4.** No disciplinary action pending against him/her.

#### **UG 17. AWARD OF DEGREE**

The award of B. Tech. degree must be recommended by the Academic Council and approved by the Board of Management and Board of Governors of the DSU.

#### **UG 18. CONDUCT AND DISCIPLINE**

**UG 18.1.** Candidates shall conduct themselves within and outside the precincts of the University in a manner befitting the candidates of an institution of national importance. The University has a separate ordinance Code and Conduct of Candidates which is applicable to all candidates of the University.

#### **UG 19. REPEAL AND SAVINGS**

Notwithstanding anything contained in these Regulations, the provisions of any guidelines, orders, rules or regulations in force at the University shall be inapplicable to the extent of their inconsistency with these Regulations. The Academic Council, Board of Management and Board of Governors of Dayananda Sagar University may revise, amend or change the regulations from time to time.



## **UG 20. INTERPRETATION**

Any questions as to the interpretation of these Regulations shall be decided by the University, whose decision shall be final. The University shall have the powers to issue clarifications to remove any doubt, difficulty or anomaly which may arise during the implementation of the provisions of these regulations

## **Department of Computer Science and Engineering (Cyber Security)**

### **VISION**

Ignite and nurture young learners to provide a sustainable, humane, and research-centric educational platform in the domain of cybersecurity for building a robust, resilient, and attack-free digital universe.

### **MISSION**

1. Provide committed and competent faculty and educational infrastructure to impart the theoretical and practical foundation of cybersecurity in the emanating youth.
2. Establish MoUs and Centre of Excellences (CoEs) with Information Technology Sector to provide industry-ready cybersecurity graduates with research instinct imbibed for the sustainable development of young learners
3. Build collaborative and teamwork-centric project-oriented learning environment, to address global challenges whilst preserving human and ethical values.
4. Encourage young minds to educate society to restore nationwide human safety and security in digital world.

### **FACULTY LIST**

<b>Sl No</b>	<b>Name of the Faculty</b>	<b>Designation</b>
1	Dr. Kiran B. Malagi	Associate Professor and Chairperson CSE (Cyber Security)
2	Dr. Durbadal Chattaraj	Associate Professor
3	Naveen Kulkarni	Assistant Professor
4	Sharanabasappa Tadkal	Assistant Professor
5	Ranjima P	Assistant Professor

## **PROGRAM OUTCOMES (PO'S):**

**A graduate of Computer Science and Engineering (Cyber Security) program will demonstrate:**

- **PO1. Engineering knowledge:** Apply the information of arithmetic, science, engineering fundamentals, associate degree and an engineering specialization to the answer of advanced engineering issues.
- **PO2. Problem analysis:** Identify, formulate, review analysis literature, and analyse complicated engineering issues reaching corroborated conclusions mistreatment initial principles of arithmetic, natural sciences, and engineering sciences.
- **PO3. Design/development of solutions:** Design solutions for advanced engineering issues and style system elements or processes that meet the required wants with applicable thought for the general public health and safety, and therefore the cultural, societal, and environmental concerns.
- **PO4. Conduct investigations of complex problems:** Use analysis-based information and research ways as well as style of experiments, analysis and interpretation of information, and synthesis of the knowledge to supply valid conclusions.
- **PO5. Modern tool usage:** Create, select, and apply acceptable techniques, resources, associate degree fashionable engineering and IT tools as well as prediction and modelling to advanced engineering activities with an understanding of the restrictions.
- **PO6. The engineer and society:** Apply reasoning familiar by the discourse information to assess social group, health, safety, legal and cultural problems and therefore the resulting responsibilities relevant to the skilled engineering apply.
- **PO7. Environment and sustainability:** Understand the impact of the skilled engineering solutions in social and environmental contexts, and demonstrate the information of, and want for property development.

- **PO8. Ethics:** Apply moral principles and decide to skilled ethics and responsibilities and norms of the engineering follow.
- **PO9. Individual and team work:** Function effectively as a private, and as a member or leader in numerous groups, and in multidisciplinary settings.
- **PO10. Communication:** Communicate effectively on advanced engineering activities with the engineering community and with society at giant, such as, having the ability to grasp and write effective reports and style documentation, build effective shows, and provides and receive clear directions.
- **PO11. Project management and finance:** Demonstrate information and understanding of the engineering and management principles and apply these to one's own work, as a member AND leader in an passing team, to manage comes and in multidisciplinary environments.
- **PO12. Life-long learning:** Recognize the necessity for, and have the preparation and talent to interact in freelance and life - long learning within the broadest context of technological amendment.

## **PSOs**

1. Ability to understand, analyse and develop computer programs in the areas related to networking, cryptography, web development and database management by adhering software development life cycle.
2. Graduate students will be able to develop data, resource, and asset protection strategies for organizations, processes, peoples, and individuals through Cybersecurity-centric skills.

**SCHEME - B.TECH – 2020-21 ONWARDS**

**I SEM - CHEMISTRY CYCLE**

SL	PROGRAM CODE	COURSE CODE	COURSE TITLE	CR / AU	SCHEME OF TEACHING					PREREQUISITE	
					L	T	P	S/P	C	SEM	COURSE CODE
1	101-105 & 121-123	20EN1101	ENGINEERING MATHEMATICS – I	CR	03	01	--	--	04	*	***
2	101-105 & 121-123	20EN1102	ENGINEERING CHEMISTRY	CR	03	--	02	--	04	*	***
3	101-105 & 121-123	20EN1103	FUNDAMENTALS OF PROGRAMMING	CR	03	--	04	--	05	*	***
4	101-105 & 121-123	20EN1104	BASIC ELECTRICAL ENGINEERING	CR	03	--	--	--	03	*	***
5	101-105 & 121-123	20EN1105	ENVIRONMENTAL STUDIES	CR	02	--	--	--	02	*	***
6	101-105 & 121-123	20EN1106	ELEMENTS OF MECHANICAL ENGINEERING	CR	02	--	02	--	03	*	***
					<b>16</b>	<b>01</b>	<b>08</b>	<b>--</b>	<b>21</b>		
7	101-105 & 121-123	20AU0004	CONSTITUTION OF INDIA AND PROFESSIONAL ETHICS	AU	02	--	--	--	--	*	***

CR – Credit, AU – Audit, L – Lecture, T – Tutorial, P – Practical, S/P – Seminar/Project, C – No. of Credits

**SCHEME - B.TECH – 2020-21 ONWARDS**

**I SEM - PHYSICS CYCLE**

SL	PROGRAM CODE	COURSE CODE	COURSE TITLE	CR / AU	SCHEME OF TEACHING					PREREQUISITE	
					L	T	P	S/P	C	SEM	COURSE CODE
1	101-105 & 121-123	20EN1101	ENGINEERING MATHEMATICS – I	CR	03	01	--	--	04	*	***
2	101-105 & 121-123	20EN1107	ENGINEERING PHYSICS	CR	03	--	02	--	04	*	***
3	101-105 & 121-123	20EN1108	BASIC ELECTRONICS	CR	03	--	02	--	04	*	***
4	101-105 & 121-123	20EN1109	BIOLOGICAL SCIENCES	CR	02	--	--	--	02	*	***
5	101-105 & 121-123	20EN1110	TECHNICAL COMMUNICATION	CR	02	--	02	--	03	*	***
6	101-105 & 121-123	20EN1111	ENGINEERING GRAPHICS & DESIGN	CR	01	--	04	--	03	*	***
7	101-105 & 121-123	20EN1112	DESIGN THINKING & INNOVATION	CR	--	--	02	--	01	*	***
					<b>14</b>	<b>01</b>	<b>12</b>	<b>--</b>	<b>21</b>		
8	101-105 & 121-123	20AU0021	KANNADA KALI – II	AU	02	--	--	--	--	*	***
		20AU0025	KANNADA MANASU – II	AU	02	--	--	--	--	*	***

CR – Credit, AU – Audit, L – Lecture, T – Tutorial, P – Practical, S/P – Seminar/Project, C – No. of Credits

**SCHEME - B.TECH – 2020-21 ONWARDS**

**II SEM - PHYSICS CYCLE**

SL	PROGRAM CODE	COURSE CODE	COURSE TITLE	CR / AU	SCHEME OF TEACHING					PREREQUISITE	
					L	T	P	S/P	C	SEM	COURSE CODE
1	101-105 & 121-123	20EN1201	ENGINEERING MATHEMATICS – II	CR	03	01	--	--	04	*	***
2	101-105 & 121-123	20EN1107	ENGINEERING PHYSICS	CR	03	--	02	--	04	*	***
3	101-105 & 121-123	20EN1108	BASIC ELECTRONICS	CR	03	--	02	--	04	*	***
4	101-105 & 121-123	20EN1109	BIOLOGICAL SCIENCES	CR	02	--	--	--	02	*	***
5	101-105 & 121-123	20EN1110	TECHNICAL COMMUNICATION	CR	02	--	02	--	03	*	***
6	101-105 & 121-123	20EN1111	ENGINEERING GRAPHICS & DESIGN	CR	01	--	04	--	03	*	***
7	101-105 & 121-123	20EN1112	DESIGN THINKING & INNOVATION	CR	--	--	02	--	01	*	***
					<b>14</b>	<b>01</b>	<b>12</b>	<b>--</b>	<b>21</b>		
9	101-105 & 121-123	20AU0021	KANNADA KALI	AU	02	--	--	--	--	*	***
		20AU0025	KANNADA MANASU	AU	02	--	--	--	--	*	***

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**SCHEME - B.TECH – 2020 -21 ONWARDS**

**II SEM - CHEMISTRY CYCLE**

SL	PROGRAM CODE	COURSE CODE	COURSE TITLE	CR / AU	SCHEME OF TEACHING					PREREQUISITE	
					L	T	P	S/P	C	SEM	COURSE CODE
1	101-105 & 121-123	20EN1201	ENGINEERING MATHEMATICS – II	CR	03	01	--	--	04	*	***
2	101-105 & 121-123	20EN1102	ENGINEERING CHEMISTRY	CR	03	--	02	--	04	*	***
3	101-105 & 121-123	20EN1103	FUNDAMENTALS OF PROGRAMMING	CR	03	--	04	--	05	*	***
4	101-105 & 121-123	20EN1104	BASIC ELECTRICAL ENGINEERING	CR	03	--	--	--	03	*	***
5	101-105 & 121-123	20EN1105	ENVIRONMENTAL STUDIES	CR	02	--	--	--	02	*	***
6	101-105 & 121-123	20EN1106	ELEMENTS OF MECHANICAL ENGINEERING	CR	02	--	02	--	03	*	***
					<b>16</b>	<b>01</b>	<b>08</b>	<b>--</b>	<b>21</b>		
7	101-105 & 121-123	20AU0004	CONSTITUTION OF INDIA AND PROFESSIONAL ETHICS	AU	02	--	--	--	--	*	***

CR – Credit, AU – Audit, L – Lecture, T – Tutorial, P – Practical, S/P – Seminar/Project, C – No. of Credits



III

**SCHEME - B.TECH – 2020-21 ONWARDS**  
**SEM - COMPUTER SCIENCE & ENGINEERING (CYBER SECURITY)**

SL	PROGRAM CODE	COURSE CODE	COURSE TITLE	CR / AU	SCHEME OF TEACHING					PREREQUISITE	
					L	T	P	S/P	C	SEM	COURSE CODE
1	123	20CS2301	DISCRETE MATHEMATICAL STRUCTURES	CR	3	-	-	-	3	*	***
2	123	20CS2302	DATA STRUCTURES	CR	3	-	-	-	3	I/II	20EN1103
3	123	20CS2303	DIGITAL ELECTRONICS & LOGIC DESIGN	CR	3	-	-	2	4	*	***
4	123	20CS2304	DATABASE MANAGEMENT SYSTEMS	CR	3	-	-	-	3	*	***
5	123	20CS2305	COMPUTATIONAL THINKING WITH PYTHON	CR	3	-	-	-	3	*	***
6	123	20CS2306	AGILE SOFTWARE ENGINEERING	CR	2	-	-	2	3	*	***
7	123	20CS2307	DATA STRUCTURES LAB	CR	-	-	2	-	1	*	***
8	123	20CS2308	DATABASE MANAGEMENT SYSTEMS LAB	CR	-	-	2	-	1	*	***
9	123	20CS2309	MANAGEMENT AND ENTREPRENEURSHIP	CR	2	-	-	-	2	*	***
10	123	20CS2310	LIBERAL STUDIES - I	CR	1	-	-	-	1	*	***
					20	-	04	04	24		

CR - CREDIT, AU - AUDIT, L - LECTURE, T - TUTORIAL, P - PRACTICAL, S/P - SEMINAR/PROJECT, C - NO. OF CREDITS

CR – Credit, AU – Audit, L – Lecture, T – Tutorial, P – Practical, S/P – Seminar/Project, C – No. of Credits

**SCHEME - B.TECH – 2020-21 ONWARDS**

**IV**

**SEM - COMPUTER SCIENCE & ENGINEERING (CYBER SECURITY)**

SL	PROGRAM CODE	COURSE CODE	COURSE TITLE	CR / AU	SCHEME OF TEACHING					PREREQUISITE	
					L	T	P	S/P	C	SEM	COURSE CODE
1	123	20CS2401	PROBABILITY AND STATISTICS	CR	3	-	-	-	3	*	***
2	123	20CS2402	OBJECT ORIENTED DESIGN AND PROGRAMMING	CR	3	-	-	-	3	*	***
3	123	20CS2403	PRINCIPLES OF MICROPROCESSORS AND COMPUTER ORGANIZATION	CR	4	-	-	-	4	*	***
4	123	20CS2404	FINITE AUTOMATA & FORMAL LANGUAGES	CR	3	-	-	2	4	*	***
5	123	20CS2405	INTRODUCTION TO NETWORKS & CYBERSECURITY	CR	3	-	-	-	3	*	***
6	123	20CY2401	INTRODUCTION TO ETHICAL HACKING	CR	3	-	-	-	3	*	***
7	123	20CS2407	OBJECT ORIENTED PROGRAMMING LAB	CR	-	-	2	-	1	*	***
8	123	20CS2408	MICROPROCESSORS LABORATORY	CR	-	-	2	-	1	*	***
9	123	20CS2409	SPECIAL TOPICS - I	CR	-	-	-	4	2	*	***
10	123	20CS2410	LIBERAL STUDIES - II	CR	1	-	-	-	1	*	***
					20	-	04	06	25		

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CR – Credit, AU – Audit, L – Lecture, T – Tutorial, P – Practical, S/P – Seminar/Project, C – No. of Credits

**SEM - COMPUTER SCIENCE & ENGINEERING (CYBER SECURITY)**

SL	PROGRAM CODE	COURSE CODE	COURSE TITLE	CR/AU	SCHEME OF TEACHING					PREREQUISITE	
					L	T	P	S/P	C	SEM	COURSE CODE
1	123	20CS3501	COMPUTER NETWORKS	CR	3	-	2	-	4	*	***
2	123	20CS3502	DESIGN AND ANALYSIS OF ALGORITHMS	CR	3	-	-	-	3	*	***
3	123	20CS3503	OPERATING SYSTEMS	CR	3	1	-	-	4	*	***
4	123	20CY3501	MACHINE LEARNING FOR CYBER SECURITY	CR	3	-	2	-	4	*	***
5	123	20CY35XX	PROFESSIONAL ELECTIVE-1	CR	3	-	-	-	3	*	***
6	123	20OE00XX	OPEN ELECTIVE-1	CR	3	-	-	-	3	*	***
7	123	20CS3505	DESIGN AND ANALYSIS OF ALGORITHMS LAB	CR	-	-	2	-	1	*	***
8	123	20CS3506	OPERATING SYSTEMS LAB	CR	-	-	2	-	1	*	***
9	123	20CS3507	SPECIAL TOPICS -II	CR	-	-	-	4	2	*	***
					18	1	8	4	25		

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CR – Credit, AU – Audit, L – Lecture, T – Tutorial, P – Practical, S/P – Seminar/Project, C – No. of Credits

**V SEM-PROFESSIONAL ELECTIVE – I**

<b>S L</b>	<b>COURSE CODE</b>	<b>COURSE TITLE</b>	<b>SCHEME OF TEACHING</b>				
			<b>L</b>	<b>T</b>	<b>P</b>	<b>S/ P</b>	<b>C</b>
1	20CY3502	PATTERN RECOGNITION	03	-	-	-	03
2	20CY3503	DISTRIBUTED COMPUTING	03	-	-	-	03
3	20CY3504	INFORMATION WARFARE	03	-	-	-	03
4	20CS3512	INTERNET OF THINGS	03	-	-	-	03
5	20CS3510	MICROCONTROLLERS AND EMBEDDED SYSTEMS	03	-	-	-	03

CR – Credit, AU – Audit, L – Lecture, T – Tutorial, P – Practical, S/P – Seminar/Project, C – No. of Credits

**SEM - COMPUTER SCIENCE & ENGINEERING (CYBER SECURITY)**

SL	PROGRAM CODE	COURSE CODE	COURSE TITLE	CR/AU	SCHEME OF TEACHING					PREREQUISITE	
					L	T	P	S/P	C	SEM	COURSE CODE
1	123	20CY3601	CRYPTOGRAPHY AND NETWORK SECURITY	CR	3	1	-	-	4	*	***
2	123	20CY3602	DATA PRIVACY	CR	3	-	-	-	3	*	***
	123	20CS3603	CLOUD APPLICATION DEVELOPMENT	CR	3	-	-	-	3	*	***
4	123	20CY36XX	PROFESSIONAL ELECTIVE-2	CR	3	-	-	-	3	*	***
5	123	20CY36XX	PROFESSIONAL ELECTIVE-3	CR	3	-	-	-	3	*	***
6	123	20OE00XX	OPEN ELECTIVE-2	CR	3	-	-	-	3	*	***
7	123	20CY3604	CRYPTOGRAPHY AND NETWORK SECURITY LAB	CR	-	-	2	-	1	*	***
8	123	20CY3605	DATA PRIVACY LAB	CR	-	-	2	-	1	*	***
					18	01	04	-	21		

CR – CREDIT, AU – AUDIT, L – LECTURE, T – TUTORIAL, P – PRACTICAL, S/P – SEMINAR/PROJECT, C – NO. OF C

CR – Credit, AU – Audit, L – Lecture, T – Tutorial, P – Practical, S/P – Seminar/Project, C – No. of Credits

**VI SEM-PROFESSIONAL**

**ELECTIVE – II**

SL	COURSE CODE	COURSE TITLE	SCHEME OF TEACHING				
			L	T	P	S/P	C
1	20CY3606	OPERATING SYSTEM SECURITY	3			-	03
2	20CY3607	PROACTIVE SECURITY TOOLS	3			-	03
3	20CS3602	SECURE PROGRAMMING	3			-	03

**VI SEM-PROFESSIONAL**

**ELECTIVE – III**

SL	COURSE CODE	COURSE TITLE	SCHEME OF TEACHING				
			L	T	P	S/P	C
1	20CY3608	DATA MINING AND ANALYSIS	3			-	03
2	20CY3609	CYBER SECURITY PROGRAMS AND POLICIES	3			-	03
3	20CY3610	MOOC Course	3			-	03

CR – Credit, AU – Audit, L – Lecture, T – Tutorial, P – Practical, S/P – Seminar/Project, C – No. of Credits

**SCHEME - B. TECH – 2020-21 ONWARDS**

**VII**

**SEM - COMPUTER SCIENCE & ENGINEERING (CYBER SECURITY)**

SL	PROGRAM CODE	COURSE CODE	COURSE TITLE	CR/AU	SCHEME OF TEACHING					PREREQUISITE	
					L	T	P	S/P	C	SEM	COURSE CODE
1	123	20CY47XX	PROFESSIONAL ELECTIVE – 4	CR	3	-	-	-	3	*	AS INDICATED IN ELECTIVE LIST
2	123	20CY47XX	PROFESSIONAL ELECTIVE – 5	CR	3	-	-	-	3	*	
3	123	200EXXXX	OPEN ELECTIVE-3	CR	3	-	-	-	3	*	***
4	123	20CY4701	PROJECT PHASE – I / INTERNSHIP	CR	-	-	-	6	3	*	***
					<b>09</b>			<b>06</b>	<b>12</b>		

CR – Credit, AU – Audit, L – Lecture, T – Tutorial, P – Practical, S/P – Seminar/Project, C – No. of Credits

**VII SEM-PROFESSIONAL**

**ELECTIVE – IV**

SL	COURSE CODE	COURSE TITLE	SCHEME OF TEACHING				
			L	T	P	S/P	C
1	20CY4702	VULNERABILITY ANALYSIS AND PENETRATION TESTING	3	-	-	-	03
2	20CY4703	QUANTUM CRYPTOGRAPHY AND COMMUNICATION	3	-	-	-	03
3	20CY4704	WIRELESS NETWORK SECURITY	3	-	-	-	03

**VII SEM-PROFESSIONAL**

**ELECTIVE – V**

SL	COURSE CODE	COURSE TITLE	SCHEME OF TEACHING				
			L	T	P	S/P	C
1	20CY4705	CYBER FORENSICS AND CYBER LAW	3	-	-	-	03
2	20CY4706	EMBEDDED SYSTEMS SECURITY	3	-	-	-	03
3	20CY4707	BIOMETRIC SECURITY	3	-	-	-	03

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**VIII****SCHEME - B. TECH – 2020-21 ONWARDS**  
**SEM - COMPUTER SCIENCE & ENGINEERING (CYBER SECURITY)**

SL	PROGRAM CODE	COURSE CODE	COURSE TITLE	CR/AU	SCHEME OF TEACHING					PREREQUISITE	
					L	T	P	S/P	C	SEM	COURSE CODE
1	123	20CY48XX	Professional Elective – 6	CR	3	-	-	-	3	*	AS INDICATED IN ELECTIVE LIST
2	123	20CY4801	Project Phase – II	CR	-	-	-	12	6	*	***
3	123	20CY4802	Internship	CR	-	-	-	06	3	*	***
					<b>03</b>	-	-	<b>18</b>	<b>12</b>		

CR – Credit, AU – Audit, L – Lecture, T – Tutorial, P – Practical, S/P – Seminar/Project, C – No. of Credits

**VIII SEM-PROFESSIONAL**

**ELECTIVE – VI**

<b>SL</b>	<b>COURSE CODE</b>	<b>COURSE TITLE</b>	<b>SCHEME OF TEACHING</b>				
			<b>L</b>	<b>T</b>	<b>P</b>	<b>S/P</b>	<b>C</b>
1	20CY4803	IOT AND BIG DATA SECURITY	3	-	-	-	03
2	20CY4804	RISK MANAGEMENT	3	-	-	-	03
3	20CY4805	MOBILITY SECURITY	3	-	-	-	03

CR – Credit, AU – Audit, L – Lecture, T – Tutorial, P – Practical, S/P – Seminar/Project, C – No. of Credits

**OPEN ELECTIVES LIST - B.TECH PROGRAMME – 2020-21 Batch**

SL.No	COURSE CODE	COURSE TITLE	OFFERING DEPARTMENT
1	20OE0001	ARTIFICIAL INTELLIGENCE	CSE
2	20OE0002	DATA STRUCTURES & ALGORITHMS	CSE
3	20OE0003	WEB TECHNOLOGIES	CSE
4	20OE0004	SOCIAL NETWORKS & ANALYTICS	CSE
5	20OE0005	MANAGEMENT INFORMATION SYSTEM	CSE
6	20OE0006	FUNDAMENTALS OF CLOUD COMPUTING	CSE
7	20OE0007	MACHINE LEARNING WITH PYTHON	CSE
8	20OE0008	BUSINESS INTELLIGENCE	CSE
9	20OE0009	EVOLUTION OF TELECOM	ECE
10	20OE0010	SENSORS AND TRANSDUCERS	ECE
11	20OE0011	DIGITAL SYSTEM DESIGN	ECE
12	20OE0012	SENSORS, NETWORKS AND PROTOCOLS	ECE
13	20OE0013	IMAGE PROCESSING AND COMPUTER VISION	ECE
14	20OE0014	AUTOMOTIVE EMBEDDED SYSTEMS	ECE
15	20OE0015	AUTOMOBILE ENGINEERING	MECH
16	20OE0016	RAPID MANUFACTURING TECHNOLOGIES	MECH
17	20OE0017	ROBOTICS ENGINEERING	MECH
18	20OE0018	PRODUCT DESIGN & MANUFACTURING	MECH
19	20OE0019	RENEWABLE ENERGY SOURCES	MECH
20	20OE0020	MICRO ELECTRO MECHANICAL SYSTEMS (MEMS)	MECH
21	20OE0021	PRODUCT ENGINEERING AND ENTREPRENEURSHIP	CST
22	20OE0022	SMALL BUSINESS LAUNCH	CST
23	20OE0023	INTRODUCTION TO AEROSPACE ENGINEERING	ASE
24	20OE0024	AIRCRAFT SYSTEMS AND INSTRUMENTATION	ASE
25	20OE0025	FOUNDATIONS OF DATA SCIENCE	CSE
26	20OE0026	CALCULUS II	MATH
27	20OE0027	IDEA GENERATION AND VALIDATION	CST
28		FUNDAMENTALS OF NETWORK SECURITY	CSE(CS)