Habib University
shaping futures

COURSE CATALOG

2025-26

HABIB UNIVERSITY
Karachi, Pakistan

Disclaimer:

Habib University Course Catalog 2025-26

The catalog is not to be considered as a binding contract between Habib University and students, parents, or guardians of students, nor other interested parties. Habib University reserves the right at any time, without advance notice, to change any part, portion or provision of the catalog; no vested rights shall run or be created by the catalog, including the right to notice of any modification, novation, amendment, supplementation, or other change of any term, provision or content of the catalog; such right of the University to enact changes, etc., especially shall include but not be limited to:

(i) Withdrawal or cancellation of classes, courses, and programs;
(ii) Changes in fee schedules;
(iii) Changes in the academic calendar;
(iv) Changes in admission and registration requirements;
(v) Changes in the regulations and requirements governing instruction in and graduation from the University;
(vi) Changes in instructors;
(vii) Changes in the rules and regulations governing the students and student body organizations;
(viii) Changes of on-campus facilities, programs, and costs for room and/or board of students;
(ix) Changes of extra-curricular student activities, programs, and offerings; and
(x) Changes to any other regulation affecting students, their parents/guardians, or other interested parties.

The official version of the Habib University Course Catalog is updated at the start of every academic year and resides on the Habib University website (see https://habib.edu.pk/office-of-registrar/academic-prospectus/). For any further information about the University, please consult the University website (www.habib.edu.pk).

This catalog is compiled, designed & published by the Office of Undergraduate Education & Accreditation in assistance with Office of Academic Systems & Registrar.

Habib University Course Catalog 2025-2026

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1. Introduction

1.1. About Habib University

As Pakistan's only exclusively undergraduate focused liberal arts and sciences university, Habib University leverages the American style of undergraduate education, and has developed a distinctive world-class liberal arts curriculum that is contextually relevant and grounded to our South Asian context and heritage. Habib University's liberal arts and sciences framework offers students broad-based knowledge across a variety of disciplines while delving deeply into a specific field. It provides a combination of technical expertise and vital soft skills, qualities that are highly sought in today's professional world.

Passionate and supportive, Habib University's internationally qualified faculty is invested in their students' academic, personal and professional success. As dedicated teachers, respected experts and innovative researchers, they will share their experience with students, involve them in their projects and prime them to embark fearlessly on their academic journey. Habib University provides a meta-curricular learning experience which takes students beyond conventional academics.

Student Life activities are a large part of what defines learning at Habib. Through these activities, students will encounter diverse perspectives and find solutions to real-world problems, making their learning experience a truly transformative one. With multipurpose recreational spaces, technology-enabled classrooms, state-of-the-art labs and studios, and much more, Habib University's purpose-built campus provides students plenty of opportunities to maximize their potential.

Habib University forms a diverse community of learners hailing from a variety of backgrounds, who bring with them a myriad of perspectives and opinions. Encountering such different people and ideas builds an awareness of global perspectives among students.

Global partnerships have been instrumental in the development of Habib University, enabling us to adopt the best practices in higher education. Partnerships with two of the top universities in the US – Texas A&M and Carnegie Mellon – have resulted in mutually enriching and supportive relationships from the early stages of institutional planning through curriculum development to ongoing academic operations and administration. Habib University is also collaborating with leading undergraduate liberal arts colleges – including Harvey Mudd College and Pitzer College, in Claremont, California – on faculty and student exchange, faculty development, co-teaching of courses, and program development. To expand student opportunities, Habib University has partnered with some of the world's leading programs and universities, including Stanford University's Summer International Honors Program, University of California at Berkley and University of Michigan at Ann Arbor. These are highly competitive programs that allow our top students to spend a Summer for study abroad.

1.2. Vision

To be a global leader and South Asia's preeminent undergraduate liberal arts and sciences university.

1.3. Mission

Habib University's mission is *shaping futures*. The University accomplishes this mission by providing a demanding, contextually relevant and engaging world class liberal arts and sciences education to the most talented students, regardless of their financial capacity or any social considerations, thereby empowering them to build their futures, enrich their lives and become leaders in improving their country and the world.

1.4. Values

Habib University's values are captured in the Arabic verb *Yohsin* (يحسن), which is rooted in the core Islamic notion of *'iḥsān*. A multidimensional concept, with no single word corollary in English, *Yohsin* entails measuring each person's worth not only by the depth of their knowledge or skills, but by the application of their knowledge and skills to both personal self-cultivation and perfecting the world. This core philosophy is reflected in Habib's five aspirational values for all community members:

(i) strive for excellence,
(ii) do what is beautiful in all actions,
(iii) nurture passion,
(iv) respect all others, and
(v) serve the community.

1.5. University Learning Goals

	Themes	Imp. Attributes	Goals
KNOW	Knowledge	Breadth & Depth	Demonstrate both a genuine breadth of knowledge through the Habib Liberal Core and a capable depth of knowledge through command of their chosen major.
	Interdisciplinary & Transdisciplinary	Synthesis & Connections	Synthesize knowledge, methods and viewpoints from different disciplines to both make meaningful connections among and transcend them.
	Context	Contextually Grounded	Demonstrate their knowledge is grounded in a firm understanding of the historical, social, political, economic, religious, regional and global contexts in which they are located.
ACT	Creativity & Innovation	Imaginative & Interesting	Imagine, develop and produce creative, original ideas, interpretations and works.
	Critical Inquiry	Analysis & Critical Thought	Analyze and formulate relevant critical questions and answer those questions in a substantive way supported by quantitative and qualitative evidence.
	Communication & Collaboration	Interaction & Teamwork	Listen actively to comprehend the meaning of others and successfully express cogent meaning through capable oral, written, and artistic modes of communication. Effectively interact and collaborate with others.
VALUE	Social Impact	Service & Sustainability	Recognize the reciprocity of knowledge and service, and benefit their community, society and the environment through socially responsible and sustainable engagement.
	Thoughtful Self-Cultivation	*Yohsin* Values & Lifelong Learning	Cultivate lifelong curiosity by engaging in inquiry and reflection to acquire and apply new knowledge.
	Ethical & Cultural Competence	Personal & Professional Ethics	Develop and nurture their own beliefs, values and sense of responsibility to reach informed conclusions, while considering, appreciating and respecting the perspectives of others.

1.6. Academic Calendar 2025-26

Fall 2025	
Welcome Evening for New Students (Class of 2029)	August 8, 2025
Orientation for New Students (Class of 2029)	August 9, 2025
Zero Week for New Students (Class of 2029)	August 11 – 13 & 15, 2025
Independence Day†	August 14, 2025
Arbaeen/Chehlum of Imam Hussain (AS)*†	August 14, 2025
First Day of Classes	August 18, 2025
Last Day to Drop Course(s)	August 23, 2025
Last Day to Add Course(s)	August 25, 2025
12th Rabi-ul-Awwal*†	September 4, 2025
Mid-Term Examinations	September 29 – October 3 & October 6 – 10, 2025
Mid-Semester Recess†	October 11 & 13 – 14, 2025
Release of Spring 2026 Course Offerings and Schedule; Advisement for Spring 2026 Begins; PSCS Shopping Cart Opens	November 3, 2025
Last day to Withdraw from Course(s) – Fall 2025	November 7, 2025
Iqbal Day† (Subject to Announcement by the Federal Government)	November 9, 2025
Self-Service Early Enrollment for Spring 2026 (Seniors)	November 11 – 12, 2025
Self-Service Early Enrollment for Spring 2026 (Juniors)	November 13 – 14, 2025
Self-Service Early Enrollment for Spring 2026 (Sophomores)	November 18 – 19, 2025
Self-Service Early Enrollment for Spring 2026 (Freshmen)	November 20 – 21, 2025
Conference Days	November 28 – 29, 2025
Self-Service General Enrollment for Spring 2026 (Without Restrictions) Opens	December 4, 2025
Last Day of Regular Classes	December 5, 2025
Reading Days	December 6 – 9, 2025
Final Examinations – Fall Semester 2025	December 10 – 13 & 15 – 16, 2025
Last Date to File Petition for Incomplete Grade – Fall 2025	December 16, 2025
Faculty to Discuss Semester Grades with Students	December 17 – 19, 2025
Grades Due for Fall 2025	December 22, 2025
Faculty Departs for Winter Break	December 23, 2025
Quaid-e-Azam Day/Christmas†	December 25, 2025

Spring 2026	
Faculty Returns	January 5, 2026
First Day of Classes	January 12, 2026
Last Day to Drop Course(s)	January 17, 2026
Last Day to Add Course(s)	January 19, 2026
Letter Grades Due for "I" Grades Awarded in Fall 2025	January 27, 2026
Kashmir Day†	February 5, 2026
1st Ramadan*; The University Switches to Ramadan Schedule	February 18, 2026
Mid-Term Examinations	February 23 – 27 & March 2 – 6, 2026
21st Ramazan*†	March 10, 2026
Eid-ul-Fitr Holidays*†	March 20 – 22, 2026
Pakistan Day†	March 23, 2026
Last Day to Withdraw from Course(s) – Spring 2026	April 3, 2026
Release of Fall 2026 Course Offerings and Schedule; Advisement for Fall 2026 Begins; PSCS Shopping Cart Opens	TBD
Self-Service Early Enrollment for Fall 2026 (Seniors)	TBD
Self-Service Early Enrollment for Fall 2026 (Juniors)	TBD
Self-Service Early Enrollment for Fall 2026 (Sophomores)	TBD
Self-Service Early Enrollment for Fall 2026 (Freshmen)	TBD
Self-Service General Enrollment for Fall 2026 (Without Restrictions) Opens	TBD
Last Day of Regular Classes	April 30, 2026
Labor Day†	May 1, 2026
Reading Days	May 1 – 3, 2026
Final Examinations – Spring 2026	May 4 – 9, 2026
Last Date to File Petition for Incomplete Grade – Spring 2026	May 9, 2026
Faculty to Discuss Semester Grades with Students	May 11 – 13, 2026
Grades Due for Spring 2026	May 18, 2026
Youm-e-Takbeer† (Only if the Federal Government announces the holiday)	May 28, 2026
Eid-ul-Adha*†	May 27 – 29, 2026
Convocation	June 6, 2026
Faculty Departs for Summer Break	June 8, 2026

Summer 2026	
First Day of Classes	June 8, 2026
Ashura*†	June 24 – 26, 2026
Faculty Returns for Fall 2026	July 27, 2026
Last Day of Classes	July 31, 2026
Final Examinations – Summer 2026	August 3 – 4, 2026
Arbaeen/Chehlum of Imam Hussain (AS)*†	August 5, 2026
Letter Grades Due for "I" Grades Awarded in Spring 2026	August 7, 2026
Grades Due for Summer 2026	August 10, 2026
Independence Day†	August 14, 2026
12th Rabi-ul-Awwal*†	August 25, 2026

Notes

- Habib University reserves the right to correct typographical errors or to adjust the Academic Calendar at any time it deems necessary.

* Subject to sighting of the new moon.
† No classes.

2. Policies & Regulations

Applicable to all Habib University students, faculty, and academic staff

2.1. Academic Rights and Responsibilities

Habib University is a community of learners founded on the right to freedom of thought and respectful exchange of ideas. Neither students nor faculty should be disadvantaged based on their political, religious, or other opinions. No member of the Habib University community will behave in any manner that infringes on the rights of any student or faculty to teach, learn, carry out research, or pursue creative or other activities connected to the University.
Students are expected to attend all classes, seminars, and labs and to follow any other reasonable course of study as determined by their instructors, academic advisors, or the Board of Faculty. Classroom assignments and course/degree requirements should be completed as prescribed to allow faculty enough time for adequate evaluation. Failure to fulfill these responsibilities may adversely affect course grades, cumulative grade point average (CGPA), and/or progress within the student's degree program.
Academic dishonesty shall be considered a serious violation of these responsibilities and will be subject to strict disciplinary action as prescribed by the Habib University's Academic Integrity Policy. Academic dishonesty includes, but is not limited to, cheating, plagiarism, and collusion.
Faculty shall evaluate student performance based on the expectations and the content of the class, lab, studio, or another course of study as defined and communicated to the students by the faculty member at the course's outset. Students who feel that they have received a capricious or arbitrary grade can appeal said grade as defined elsewhere in this document.

2.2. University Statement of Anti-Discrimination

Habib University is committed to providing a learning environment free from discrimination and to nurturing a diverse and vibrant University community while respecting the fundamental dignity and worth of all of its members. Supporting this commitment, the University does not tolerate discrimination in any form and provides mechanisms for redress for students who feel they are being discriminated against.

Habib University does not discriminate against any person in the management and administration of its academic and admission policies, scholarship and financial aid programs, and other University-administered programs. Nor does the University permit the harassment of any student or applicant on the basis of race, color, sex, gender, religion, national origin, creed, disability, marital status, sexual orientation, partnership status, pregnancy, age, military status, or any other legally protected status.

The Office of Community Values and Standards (OCVS) is responsible for coordinating the University's adherence to this policy and for complaint procedures in regard to discrimination or harassment.

2.3. Academic Accommodation

Habib University is committed to ensuring that all students can take part in educational programs and services and that no individual with special leaning needs or medical condition shall, solely by reason of the disability, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity. The University aims to provide this

opportunity in a manner that meets national and international best practices. For more details and application procedure, please refer to the Habib University's 'Reasonable Academic Accommodation' policy for students with special needs, which can be accessed through the given link or on the Student Portal.

2.4. Academic Advising

Academic Advising is a central element of the undergraduate experience at Habib University. Every student enrolled at Habib University is assigned two advisors:

(i) a faculty advisor belonging to the student's program, and

(ii) an academic advisor in the Office of Academic Performance (OAP), at the time of enrollment.

Advising is intended to be a collaborative relationship between a student and their advisors through which students create educational plans consistent with their personal, academic, and career goals. Students should meet with their advisors at least three times per semester to discuss their academic progress. Students who are struggling academically should first speak with their faculty and OAP advisors for guidance. Students who have been placed below good academic standing must meet with their faculty and academic advisor as described later in this document.

Advisors work closely with faculty to identify areas where support can be offered to students. An example of such a collaboration is the Early Alert system through which faculty informs advisors about identified students they feel could benefit from enhanced support.

A student's faculty and academic advisors are listed in the University's Campus Management System (PeopleSoft) available via the Student Portal at the University's Intranet. Students wishing to change their advisor(s) should make a formal request to the Office of Academic Performance.

For more information about academic advising, and to connect with your advisor, please reach out to the Office of Academic Performance at oap@habib.edu.pk.

2.5. Declaration of a Major

All first-year students must declare their major at the time of admission.

2.6. Change of a Major

Students wishing to change their major must submit a 'Change of Major' application form to the Office of Academic Systems & Registrar. A change of major application must be endorsed by the student's academic advisor and the Office of Academic Performance and approved by the concerned Program Director/Assistant Dean. Once the approval process is complete, a coursework/graduation plan must be submitted by the student to the Office of Academic Systems & Registrar based on the graduation requirements for the most recent catalog year of the new major. This plan must be developed in consultation with the student's advisor(s) and the Office of Academic Performance. The Office of Academic Systems & Registrar will process a change of major and notify the student and all concerned University offices including the Office of Student Finance for any financial adjustments needed that result from this change. Depending upon how many courses are transferred from the previous major to new major, a change of major may result in lengthening the student's stay at Habib University beyond eight semesters.

Note: Due to student enrollment limits placed on certain majors by their relevant accreditation councils (such as the Pakistan Engineering Council, the National Computing Education & Accreditation Council, etc.), endorsement by the Office of Undergraduate Education & Accreditation may additionally be required for a change of major request to be approved.

2.7. Declaration of a Minor

Minors give Habib University students the chance to pursue secondary specialization. A minor consists of a smaller set of courses within a well-defined area as determined by the awarding program and duly approved by the University's Academic Council. Students interested in completing a minor must declare their choice as early as possible, at the latest before the end of enrollment of their seventh semester, by submitting a Declaration of Minor Form to the Office of Academic Systems & Registrar.

2.8. Transfers

All transfer requests, including transfer of credit, will be reviewed on a case-by-case basis. Incoming students who have completed university-level course work at other institutions may request a transfer of credits.

All students, regardless of their transfer status, must

(i) satisfy the University's Liberal Core requirements,
(ii) spend at least four semesters at the University as full-time students before graduation, and
(iii) fulfill transfer criteria as per the University and Higher Education Commission (HEC) policies.

Courses cannot be transferred to fulfil the mandatory Habib Liberal Core requirements.

Enrolled students at the University may submit a request for transfer of credits earned at other recognized institutions (e.g., through the University's Learn Abroad program) to the Office of Academic Systems & Registrar. The Office of Academic Systems & Registrar processes the application, seeks necessary approvals, and notifies the student and all concerned departments/units accordingly.

Courses for which transfer of credits is approved appear on the student's transcript with a **'TR'** (transfer) grade, which is not counted towards a student's semester/cumulative GPA.

Details of the process to transfer credits in available in the Habib University's Transfer of Credits Policy.

2.9. Attendance Policy

Class attendance is integral to student success and all Habib University students are expected to maintain 100% attendance in all classes in which they are enrolled. Attendance and absences will be recorded in the University's Campus Management System (PeopleSoft – PSCS) using the biometric devices installed in all academic spaces. Course instructors have the discretion to authorize students with legitimate excuses to be absent for the specified limit as mentioned in the syllabus for each course (not more than 15% of the total sessions, whereas instructors can choose to nominate a stricter attendance threshold for their individual courses as well).

It is the student's responsibility to ensure the accuracy of their attendance records on PSCS. Students must review their attendance records regularly, and in case of discrepancies, must reach out to the relevant instructors to manually update/revise attendance records of a given class/session within seven (07) days of that class/session taking place. Attendance rosters will be permanently locked after seven days.

Attendance for *(i) Habib Liberal Core* courses and *(ii) Program Core* courses will count from the first day of classes, no matter when the student enrolls therein (as indicated in the OASR's communications during the enrolment period, registering for/enrolling in Habib Liberal Core courses and Program Core courses as per their grid should be the student's first priority). Attendance for other courses will count from the day student enrolls in the class.

It is not the student's right to be absent for more than 15% (or less, as indicated by the faculty in the course syllabus and/or Office of Academic Systems & Registrar) of classes without adequate reason. Students should use the flexibility to miss classes judiciously for unforeseen circumstances. Late arrivals after five (05) minutes and early departures are marked absent by default.

Leaves are permitted only in cases of illness and family emergency. Students must inform the OASR and document their absence within one week of such absence from relevant class, and present tangible proof. In case of illness, the student must fill in the medical leave of absence application form. If absences of a student fall between 15% and 25%, the OASR will review the proof document and seek feedback of the instructor before allowing the student to continue. Absences beyond 25% will result in the automatic removal of the student from the course and the student will be awarded a **'W-A'** or **'F-A'** grade.

- Students who are found to be short of attendance in a course during attendance audits conducted before the withdrawal deadline will be withdrawn from that course. A **'W-A'** (Withdrawn on account of low attendance) grade will be assigned to the student for that course.
- Students who are found to be short of attendance in a course during attendance audits conducted after the withdrawal deadline will fail that course. An **'F-A'** (Failed on account of low attendance) grade will be assigned to the student for that course.

Note: The **'W-A'** grade is different from the **'W'** grade which a student earns on account of withdrawing from a course themselves before the course withdrawal deadline of the semester (12th week). The **'F-A'** grade is different from the **'F'** grade which a student earns on failing a course for any reason other than being short of attendance in each course. Details of grades and their definitions have been provided in section 2.13.

Students are requested to review the Student Attendance Policy for more details regarding the policy and processes followed.

2.9.1. Medical Leave of Absence (MLA) Application

Students may apply for medical leave for issues of a medical nature (i.e., injury, illness, mental health and/or substance-related issues), of either short or long term, and must be accompanied by appropriate documentation. Any student on short-term leave should arrange with instructors to make up any missed work, where possible. Any student on medical leave for the duration of a currently enrolled term will receive non-punitive withdrawal grades regardless of the point in the semester at which the leave is granted. The standard refund and financial liability policy applies in cases of medical leave. The application for medical leave must be submitted no later than three (03) days from the certificate date. The Medical Leave of Absence form is available for all students on the Student Portal.

2.10. Interim Withdrawal/Leave of Absence

A request for a leave of absence will be granted if a student cannot register for classes for a regular semester (spring or fall semester) for documented reasons. Students should consult with their academic advisor and the Office of Academic Performance before applying for Interim Withdrawal/Leave of Absence from the University.

A leave of absence is good for up to one academic year, and may be renewed only once for up to one more year. To file for a leave of absence, an Interim Withdrawal/Leave of Absence Request Form may be obtained from the Office of Academic Systems & Registrar and must be signed by the academic advisor and the concerned Assistant Dean of the school. If the student has not declared a major, the Director of Academic Performance will approve the application.

Students taking Interim Withdrawal/Leave of Absence must consider that the Higher Education Commission (HEC) requires students to be enrolled in at least eight (08) regular semesters to complete a four-year bachelor's degree. Hence students proceeding on Leave of Absence will have to complete the required semester count as one of the degree requirements.

2.11. Maximum and Minimum Course Load

Full-time students at Habib University must register for a minimum of twelve (12) credit hours in a semester to maintain full-time status. The maximum allowable course load per semester is twenty (20) credit hours. Failure to maintain full-time status may affect student's financial aid and scholarship.

2.11.1. Exceptions

- Students with a cumulative GPA (CGPA) of 3.0 and above may submit a petition to the Committee on Academic Standing to enroll in an additional course beyond the maximum allowable limit (referred to as a credit/course overload). Students allowed to take course overload may be charged an additional fee.
- Students undergoing difficult personal circumstances (such as health concerns) may also petition the Committee on Academic Standing to be allowed to enroll in less than the minimum allowable limit (referred to as a credit/course underload).
- Students who have completed their seven regular semesters and require less than 12 credits in order to complete their degree requirements in their eighth semester, may enroll in at least eight (08) credit hours without petitioning the Committee on Academic Standing.

Note: In either case of underload and overload, students must consult with the Office of Student Finance for details of financial implications of course overload and underload.

2.12. Mid-Term and Final Examination Policies

2.12.1. Final Examinations

Final examinations are held at the end of each semester during the exam weeks designated in the University's academic calendar, and are regulated either by the University's 'Examination Policy' or 'Online Examination Policy' as the case may be. The final examination schedule is announced by the Office of Academic Systems & Registrar.

All students registered in a course for which a final exam is given must attempt the exam at the scheduled time unless an exception is approved by the Vice President, Academic Affairs.

2.12.2. Midterm Examinations

The schedule of midterm exams, be they within or outside the scheduled class hours, are announced by the instructor and conducted during the midterm week announced by the Office of Academic Systems & Registrar before the start of each semester. For courses in which more than one midterm exam is administered, one midterm exam will be scheduled during the allocated week for mid-term exam, unless announced otherwise by the instructor. Exams are announced in the course syllabus distributed to the class during the first week of classes.

2.12.3. Missed Examination

All students are expected to complete their assessments, including exams, within the specified time and by the dates communicated to them by their course instructors, as indicated in the course syllabi or in the examination schedule published by the Office of Academic Systems and Registrar. Students may request a make-up exam based on religious obligation, serious illness, or family emergency.

Exams will not be rescheduled to accommodate travel, family plans, or employment commitments. A student who misses an exam without a pre-approved alternate arrangement will receive a zero (0) mark in that exam. All make-up exams must be given before the official close of the semester.

2.12.4. Religious Accommodation

Habib University recognizes that the examination schedule may conflict with some religious observations. In such cases, the University will make reasonable efforts to accommodate the affected students by providing alternative times or methods to attempt the exam(s).

Students should review the syllabus for each of their courses at the beginning of each semester to determine if personal religious observance may conflict with the scheduled exam(s). In case of conflict with a midterm exam, the student must submit to the instructor a statement describing the religious conflict, specifying the dates and times by the end of the semester enrollment period. If a suitable arrangement cannot be worked out between the student and the instructor, they should consult the concerned Program Director.

In case of a religious conflict with a final examination, the student must submit a written statement to the instructor, the concerned Program Director, and to the Office of Academic Systems & Registrar. In such a case, any approved make-up examination may be scheduled after the final examination period. If a student fails to follow this procedure or fails to give a timely notice of conflict and subsequently misses the examination, no make-up examination will be given, and the student will receive a grade of zero in that exam.

2.13. Course Lettering and Numbering

All courses are designated by a letter prefix denoting the program/subject area in which the course originates. The prefix code is followed by a three-digit sequence denoting the course level. Levels are designated as follows:

Level	Designation
000-	Pre-University and/or noncredit courses offered by the University.
100-	Courses that are generally taken in the first year.
200-	Courses that are generally taken in the second year.
300-	Courses that are generally taken in the third year.
400-	Courses that are generally taken in the final year of study

Usually, 100- and 200-level courses are categorized as lower-division/lower level whereas 300- and 400-level courses are categorized as upper-division/upper-level courses.

2.14. Cross Listed Courses:

Cross-listed courses are courses jointly offered by multiple, different programs. Cross-listed courses are aimed at promoting interdisciplinary learning and offer flexibility in course selection. Approved cross-listed courses shall have the prefixes of all the participating programs.

2.15. Grades

2.15.1. Grades and their Numerical Equivalents

Letter Grade	Scale
A+	4.00
A	4.00
A-	3.67
B+	3.33
B	3.00
B-	2.67
C+	2.33
C	2.00
C-	1.67
F	0.00
F-A	0.00 *(Fail on Account of Low Attendance)*

Letter Grade	Scale
W	Withdrawal
W-A	Withdrawal on Account of Low Attendance
AU	Audit
I	Incomplete
TR	Transfer
R	Repeat
R*	Repeat (substitute)
P	Pass
CR	Credit (Pass)
NCR	Non-Credit (Fail)

2.15.2. Grade Point Average (GPA)

GPA stands for Grade Point Average, and it is a numerical representation of a student's academic performance in the University. It is calculated by assigning a numerical value to each letter grade received in individual courses and then averaging those values to determine an overall GPA.

At the conclusion of each semester during a student's tenure at the University, grade point average will be reported in two ways:

- Semester GPA (SGPA): GPA for a single semester only;
- Cumulative GPA (CGPA): A cumulative GPA for the entire duration of the student's enrollment.

Semester and cumulative GPAs are calculated only for courses attended at the University. In some cases, GPAs might be calculated for a school, program, concentration, or major. However, these specialized GPAs will not appear on a student's transcript.

2.15.3. Calculating GPA

The formula for calculating GPA or CGPA is to divide the Total Quality Points (TQPs) earned in all courses by the Total Attempted Credits (TACs).

$$GPA = \frac{Total\ Quality\ Points\ (TQP)}{Total\ Earned\ Credits}$$

Quality Points (QP) for a course equal the sum of earned course credit hours multiplied by the numeric value of letter grade earned in the course, as per the grading scale. Total Quality Points is the sum of Quality Points of all the courses that are included in the calculation of GPA.

Note:

- Grades **A+, A, A-, B+, B, B-, C+, C, C-, F** and **F-A** earned in a course shall be counted towards the calculation of SGPA and CGPA.
- Grades **F** or **F-A** replaced by **R** or **R***, upon repeating a course, shall not be counted towards the calculation of SGPA and CGPA.
- The following grades shall not be counted towards the calculation of SGPA or CGPA:
    - Audit (AU),
    - Withdraw (W),
    - Withdrawal on Account of Low Attendance (W-A),
    - Incomplete (I),
    - Transfer (TR),
    - Credit (CR),
    - Non-Credit (NCR), and
    - Pass (P)
- In case of a change of major, grades of the following courses earned while pursuing previous major will be transferred to new major and will be counted towards the calculation of CGPA:
    - All Liberal Core Courses irrespective of grade(s) earned;
    - Courses from the previous major that can count as free electives;
    - Any Course that satisfies the requirement of the new major
    - Cross Listed Courses if they satisfy the requirements of the new major.

- In case of a change of major, the courses and respective grades which are not transferred to the new major will also be listed on the transcript, but their grades and credit hours will not be counted towards the calculation of CGPA. All passing grades of the courses not transferred will be recorded as CR and failing grades will be recorded as **NCR** or **R**, as per the number of attempts made for a failing course.

2.15.4. First Semester Grades

The first semester is the transition semester from high school to a university environment for first year students. The transition requires them to learn new skills, adjust to a new environment, understand university expectations, and learn to manage themselves as independent learners. This policy has been developed to allow for an enriching first semester experience, without the pressure of maintaining a high semester grade point average (GPA) required to be in good academic standing.

- Students' aggregate scores in a course will be converted into **CR** for a pass grade and **NCR** for a **F** grade for all the courses attended in their first semester at Habib University.
- The cut-off for **CR** will be equivalent to the passing grade as described in the grading scheme of the most recent course catalog.
- Aggregate scores are awarded to determine CR/NCR status. These will not be recorded in the students' transcript or in any other official document.
- **CR/NCR** will not be included in the calculation of the final Cumulative Grade Point Average (CGPA) that appears on a student's transcript. However, the number of credits earned during the first semester will be counted in the total credits required to graduate.
- Students earning an **NCR** in one or more first semester course(s) may repeat the same course(s) or equivalent, in subsequent semesters. For such courses, the grading policy of CR/NCR shall continue to apply.
- First semester **CR/NCR** grades will be considered in assessing students' academic standing status. First year students receiving one (01) **NCR** or more in the first semester will be placed on Academic Warning as per the University's Policy on Academic Standing.
- Habib University's financial commitment to first year students, if any, will not be affected by their first semester grades.
- First year students will be considered eligible for student employment in the second semester of their study at Habib University if they earn CR in all their first semester courses.

2.15.5. Incomplete (I) Grade

Students are expected to complete all academic coursework and assignments during a semester at the latest by the last day of classes for that semester. If a student is unable to complete a course due to serious illness or exceptional circumstances beyond their control, and the work completed to date is of passing quality, they may ask the respective faculty to request an Incomplete '**I' grade** in that course, provided that the grade gives no undue advantage to that student.

However, if a sizable portion of the course (typically constituting 25% thereof) remains incomplete by the deadline for incomplete requests/petitions, the petition is likely to be denied. Incomplete grades are not a privilege and are only awarded to students under exceptional circumstances i.e., they cannot be awarded as part of a course's assessment and grading policy.

The procedure for an Incomplete or 'I' grade is as follows:

i. Student-Faculty Meeting:

The student is expected to first meet with the faculty member of the course to determine if the outstanding work can realistically be completed within six (06) weeks after the last day of exams for the semester. This meeting needs to take place in advance of the deadline for incomplete grade requests. Under exceptional circumstances, where students are unable to meet with the faculty member (e.g., the student is hospitalized), the faculty member may submit the petition for an incomplete request on behalf of the student, indicating why the meeting with the student has not occurred. Only the instructor can submit the incomplete request and must do so no later than the last day of examinations for the semester

ii. Review of Incomplete Petitions:

Before making a decision, the Associate Dean for Academic Systems may request to meet with the student and faculty member to discuss the incomplete request and to clarify arrangements for the
completion of outstanding work. The Associate Dean may also request documentation from the student or faculty member if documentation has not been provided and/or is deemed necessary. Students and faculty will be notified of the Associate Dean's decision regarding the incomplete request by e-mail.

If the request for an incomplete grade is approved, an **"I" grade** will be entered in the student's record for the course. Incomplete grades are not calculated into a student's grade point average for the semester. Formal letter grade to replace the **I grade** must be processed within six (06) weeks of the final day of examinations for the semester in which the I grade was awarded.

2.15.6. Change of Grades

Grades awarded at the end of a semester/term for each course are considered final. Instructors may submit to the Office of Academic Systems & Registrar a Change-of-Grade request clearly mentioning the reason for which a change of grade is needed, which can only be due to a calculation or a clerical error. Change-of-grade requests are then reviewed by the Associate Dean of Academic Systems and approved by the Vice President, Academic Affairs. Change-of-Grade requests must be submitted by the course instructor at the latest by the end of the subsequent semester.

2.16. Course Repeat Policy

Students are permitted to repeat any course offered by the University in the following cases

(i) to pass a course in which an 'F', 'W', 'W-A', 'W-F' or 'NCR' grade was received or
(ii) to improve their original passing grade to satisfy a graduation requirement or
(iii) to improve their original grade to improve their CGPA.

A student is permitted to retake a course only two (02) times, for a total of three (03) attempts. All attempts will be recorded on the student's transcript, but only the best-earned grade will be counted towards GPA. All other attempts will be recorded with an **'R'** grade, denoting Repeat. '**W'** and '**W-A'** grades in a course count as an attempt and will continue to remain on the transcript even if the student repeats the course.

The University is not obligated to re-offer elective courses, but courses defined as graduation requirements (e.g., Habib Liberal Core or program core requirements), must be re-offered or, if the course has been significantly redesigned or discontinued, must have an equivalent course. The grade(s) earned in the discontinued course will be recorded on the transcript with an **'R*,'**

denoting that the original course has been discontinued and the requirement is met with a new course.

Students failing to clear courses required by their chosen program, especially those that are prerequisite(s) for later courses, may be unable to graduate within eight (08) regular semesters and must seek advice from their academic advisor and the program. The Office of Academic Performance (OAP) shall provide additional advising and academic support, in collaboration with the offering program, on a per case basis. Students failing a required course twice should consider the chosen field of study and seek advice from their academic and OAP advisors about future course of action.

A course repeat fee may be charged for any repeated course, regardless of the reason for a repeat.

2.17. Summer Semester

Summer semesters are offered at Habib University in addition to the regular semesters. The semester dates, course offerings, and enrollment are announced and handled by the Office of Academic Systems & Registrar. Fulltime students at Habib University may enroll in courses offered in the summer semester to:

- Repeat a course if an **'F,' 'W,' 'W-A,' 'F-A,' or 'NCR'** grade was awarded for that course previously;
- Improve grade for a previously attended course;
- Attend any additional courses other than those required to fulfill requirements of a major program offered at Habib University, e.g., to fulfill requirements of a minor.

Students may enroll in a maximum of two (02) courses – or eight (08) Credit Hours – in a summer semester at the University. All University academic policies and regulations including the Attendance and Academic Standing policies will continue to apply as in the regular semesters. All financial policies for the summer semester, including tuition, fees (if applicable) and financial aid are announced by the Office of Student Finance.

2.18. Auditing a Course

Students may audit a course for self-enrichment and academic exploration. An audited course will appear on the transcript with an **"AU"** (audit) grade. An audited course does not earn a grade or credit, is not included in the calculation of GPA, and does not count toward the minimum course load required for continuous enrollment. Students registering for a course for credit have priority over those wishing to audit the course. A student auditing a course may be asked to drop the course during the semester enrollment period if another student wants to enroll in the course for credit.

Audit courses do not fulfill degree requirements, but the credit value of audited courses may be included in the semester load for determining fees and the maximum number of credits carried each semester. An audited course cannot be used to meet the pre- or co-requisite condition of another course. The extent to which a student may or may not be required to participate in the audited course, including attendance or engagement, is determined by the instructor prior to enrollment. For example, the instructor may decide if a student auditing a course will be permitted to take exams, submit assignments, and have it evaluated. Students choosing to audit a laboratory course may be required to pay the additional lab fee.

The process for registering to audit a course is the same as registering for a course for credit along with the following additional requirements:

- Students wishing to audit a course must obtain approvals from the course instructor and their academic advisor and submit them to the Office of Academic Systems & Registrar using the Add/Drop course form before the end of the enrollment period.
- For courses with a laboratory component, approval from the lab instructor must also be obtained.
- The program that offers the course may have additional requirements. Students wishing to audit the course should contact the concerned Program Director for information about these requirements.

Changing a course status from audit to credit, or from credit to audit, or dropping an audit course must be done during the semester enrollment period. A student wishing to change from credit to audit status must meet the additional requirements of registering for an audit course.

An additional fee may be applicable for auditing a course if a student exceeds the maximum allowable course load. Students on financial aid should bear in mind that any fee for auditing a course may not be covered in their financial aid package. It is the student's responsibility to resolve all financial matters related to auditing a course by contacting the agency administering the scholarship or the Office of Student Finance.

2.19. Academic Standing, Probation, and Dismissal Policies

Habib University requires that all students maintain good academic standing. Academic standing is determined by academic performance and is measured through cumulative grade point average (CGPA). Failure to maintain good academic standing may result in an academic warning, first academic probation, final probation, or dismissal. At each stage, students below 'good academic standing' are provided learning support and advice to achieve good academic standing.

The Academic Standing policy defines Good Academic Standing and identifies the circumstances under which a student is placed on Academic Warning, First Academic Probation or Final Probation, and the consequences of these standings.

2.19.1. Good Academic Standing

Students who maintain a minimum cumulative grade point average (CGPA) as per the University's graduation requirement i.e., **2.33** whilst enrolled in a **minimum of twelve (12) credit hours** per semester (or less, if approved by the Committee on Academic Standing) are in Good Academic Standing.

Students who do not maintain good academic standing will not be eligible for the following:

- Habib University's Learn Abroad or Research Abroad programs;
- Dean's Honors List of the University in a given regular semester;
- Student employment opportunities;
- Scholarship and/or financial aid.

2.19.2. Academic Alert

The following two categories of students, while still in Good Academic Standing, will be considered on Academic Alert.

- Students who maintain a CGPA between 2.33 and 2.67;

- Students who maintain a CGPA above 2.33 but their semester GPA (SGPA) falls below 2.33 in any semester.

An Academic Alert triggers interventions by the Office of Academic Performance (OAP) and concerned academic programs. It is intended to provide timely academic support to prevent a student from falling below Good Academic Standing.

As per the University's Policy on Academic Standing, students and their parents/guardians are informed if their academic standing falls below Good Academic Standing.

2.19.3. Academic Warning

Students will be placed on Academic Warning in one or more of the following situations:

- Their CGPA falls below 2.33;
- First-year students receiving one or more **NCR** (non-credit fail) grade in the first semester;
- They enroll in less than 12 credit hours without approval from the Committee on Academic Standing.

Students will return to Good Academic Standing if they meet the requisite conditions as defined under Good Academic Standing.

Students on Academic Warning are strongly encouraged to meet with their academic advisor in OAP and their faculty advisor for counseling and advice.

2.19.4. First Academic Probation

Students already issued an Academic Warning will be placed on First Academic Probation if they fail to return to Good Academic Standing by the end of the semester in which they were given the warning. A student will return to Good Academic Standing if they meet the requisite conditions, as defined under Good Academic Standing.

Students on First Academic Probation must meet with their academic advisor in OAP and their faculty advisor regularly during the semester.

2.19.5. Final Academic Probation

Students will be placed on Final Academic Probation if they fail to achieve Good Academic Standing by the end of the semester in which they were placed on First Academic Probation. Students on Final Academic Probation will remain actively enrolled but under the direct supervision of OAP and the relevant program director.

Students on Final Academic Probation will only be allowed to enroll in twelve (12) to fourteen (14) credit hours and may not enroll in any new course(s) unless their required repeat courses are not available. Students will enroll only in the courses suggested by their academic and faculty advisors. They will also undergo any additional intervention plan mandated by the Office of Academic Performance and the relevant faculty advisor and Program Director. Students will return to Good Academic Standing if they meet the required conditions, as defined under Good Academic Standing.

2.19.6. Academic Dismissal

Students on Final Academic Probation will be dismissed from the University if they fail to achieve the CGPA required to maintain Good Academic Standing by the end of semester in which they

were placed on Final Academic Probation. Students dismissed for academic reasons are not eligible for re-admission to the University nor a tuition refund.

2.19.7. Academic Standing of Students Changing Major

The academic standing of students who change their major will be determined using the GPA of courses relevant to their new major.

2.20. Graduation Requirements

A student applying for graduation must satisfy all University requirements regardless of degree or major in which they are enrolled. Besides University requirement, they are required to fulfill program specific requirements identified by their respective programs.

2.20.1. Curriculum Requirements

i. **University Liberal Core:** A student must complete all requirements of the Habib Liberal Core, as described in the Course Catalog of the induction year.
ii. **Program-Specific Requirements:** A student must complete all requirements of their respective major, as described in the Course Catalog of the induction year.
iii. **Minimum Cumulative Grade Point Average (CGPA):** Students must have a minimum cumulative GPA of 2.33 at the time of graduation.
iv. Minimum Credit Hours Requirement for the Class of 2029[1]:

S#	Program / Major	Min. Credit Hours Requirement
1	BSc (Hons) Social Development and Policy	129
2	BA (Hons) Communication and Design	129 (DES)/132 (COM)[2]
3	BA (Hons) Comparative Humanities	125
4	BS Computer Science	130
5	BS Computer Engineering	135
6	BS Electrical Engineering	134

Note regarding Transfer of Credits: All transfers of credits must be processed in accordance with the Habib University Transfer of Credits Policy by the last day of enrollment of in the Spring semester of the fourth year.

For other curricular and program-specific requirements, please refer to the graduation requirement grid of the program in this catalog.

2.20.2. Good Standing

In addition to the University requirements, a student must be in:

- Good Academic Standing as defined in the Academic Standing Policy stated in the Course Catalog and any subsequent addendums;

[1] Subject to the requirements of the accreditation bodies, the minimum credit hour requirements may change for specific batches.

[2] Subject to concentration chosen, see section on Communication and Design for more details.

- Good Conduct Standing as defined in the Conduct Standing Policy.
- Good Financial Standing as defined by the Financial Standing Policy.

2.20.3. Declaration of Minor(s) Submission Deadlines

Students must declare any minor(s) before submitting their 'Intent to Graduate'. Otherwise, the minor may not appear on the final transcript.

2.20.4. Finances

Students are expected to settle all financial obligations to the University.

2.20.5. Intent to Graduate Submission Deadline

The deadline to submit the 'Intent to Graduate' form is the last day of enrollment in the Fall semester of the fourth year.

2.21. Code of Conduct

The Habib University's Student Code of Conduct is a set of rules and guidelines that govern the behavior of students at the university. This code outlines what is expected of the students in terms of ethical and professional conduct, and includes guidelines on academic integrity, plagiarism, theft, dishonesty, vandalism, verbal and physical assault, public display of affection, cyberbullying and harassment, drug and alcohol use, and other issues.

Violations of the code of conduct can result in strict disciplinary action, including penalties, suspension or even expulsion. Habib University is committed to providing a safe and healthy learning environment to all its community members to ensure their personal, emotional, social, professional, and academic well-being. The University is committed to fostering an environment of active citizenship where people fulfill their individual and collective responsibilities to maintain a safe, healthy, and respectful environment.

Students are responsible individuals and members of the Habib University community. The Code of Conduct defines the general standard of conduct expected of students in accordance with the *Yohsin* values, and outlines a set of social norms or rules and responsibilities that all students must abide by. The Code applies to conduct violations that occur at the campus or elsewhere, namely University sponsored programs or activities and/ or events or activities where the alleged student was representing the University in any capacity. Students are expected to be aware of and behave in accordance with this Code.

The Student Code of Conduct applies to all students enrolled/registered at the University for any degree awarding program or non-degree awarding program or activity.

The Code of Conduct covers and is not limited to the following subjects:

2.21.1. Academic Integrity:

Academic integrity is the commitment to, and demonstration of, honest and responsible behavior in an academic setting for all academic work. As a preeminent institution of higher education, Habib University considers violations of academic integrity as major infractions. Students who present or submit work that is not their own, or deceive their peers, colleagues, and teachers by cheating or presenting the works of others as their own commit serious violations of the University's Code of Conduct and may be awarded significant sanctions if such academic dishonesty is proven. Academic integrity violations, the procedures for filing academic

complaints, processes for complaint resolution along appeal are available in then the Academic Integrity Policy and is administered by the Office of Community Values & Standards. Substance Use and Abuse:

The use possession sale or purchase of any drug, narcotics, or any other illicit substances or supporting any such act at the University campus, at the University managed spaces outside the campus, and at any other places while representing the University is strictly prohibited. This also includes alcoholic beverages while on university property, participating in university-sponsored activities, or representing the University anywhere.

2.21.2. Smoking:

Habib University is committed to providing a safe and healthy learning environment for all members of the Habib community. To fulfill this commitment, smoking is not allowed in the University or around the University gates except in the designated areas.

2.21.3. Public Display of Affection:

Public Displays of Affection (PDA) is any gesture considered sexual/romantic as per cultural norms and takes place at a place open to other community members. The University expects students to refrain from such displays of affection on campus, at any University-managed locations, or while representing the University at events or field trips beyond the University campus.

2.21.4. Student Conduct Process

Any member of the University community may report instances of alleged misconduct to the Office of Community Values and Standards by filing an online incident report form. After an incident report is received, the student(s) will be notified by the Office of Community Values & Standards (OCVS) via e-mail. Student(s) need to respond to this notification and take the necessary action as outlined in the e-mail. The detailed process is available for all students in the Student Code of Conduct on the Student Portal. For any questions, students may contact OCVS directly at cvs@habib.edu.pk. Academic & Non-Academic Grievance

2.22. Academic Grievances

2.22.1. Academic Grievance

An academic grievance is a formal complaint made by a student regarding a problem or issue related to their academic experience at the university. This can include issues such as grade disputes, discrimination, or violations of academic policies. Habib University is committed to providing a method of redress for legally impermissible, arbitrary, or discriminatory practices. This procedure is meant to provide students with an avenue for addressing their concerns not mentioned in other University policies and/or procedures.

2.22.2. Academic Grievance Resolution Process

The process for resolving an academic grievance is as follows:

(i) Student's first action should be to try to resolve the issue informally by speaking with the instructor involved. If the issue is not resolved, the student should proceed to speak to the relevant Program Director, and then the relevant Assistant Dean if the issue persists.

(ii) In case the issue cannot be resolved informally, the student can file a formal complaint or grievance using the University's online grievance form available on student portal.

(iii) All academic grievances will be reviewed and referred to the University Grievance Committee by the Office of Community Values & Standards for further action. Students may be required to provide additional evidence to support their grievance.

2.22.3. Non-Academic Grievance

A non-academic grievance refers to a complaint or dispute that is not related to academic issues, such as grades or course content, nonacademic grievances refer to all the issues that arise due to either an inherent fault in a policy or procedure of the University or due to the failure of the institution to adhere to or administer its policies and/or procedures correctly, the Grievant suffered some significant harm or injury.

2.22.4. Non-Academic Grievance Resolution Process

The Office of Community Values & Services handles all the non-academic grievances and their resolution. For any questions related to non-academic grievances, students may contact OCVS at cvs@habib.edu.pk.

2.23. Prevention of Sexual Harassment

Habib University exhibits a zero-tolerance behavior towards any form of harassment (whether sexual or not) committed through verbal, physical (online or offline) means or mode that takes place on campus or off-campus (where official capacity is identified).

The policy of the University has been designed to be in congruence with the applicable laws, rules and regulations of Pakistan. The laws being:

1. Protection of Women Against Harassment at the Workplace Act, 2010 and the Prevention of Harassment at the Workplace Amendment 2022
2. The Higher Education Commission Policy on Protection Against Sexual Harassment in Higher Education Institutions

The University, in accordance with the above-mentioned policies, defines Sexual Harassment to be the following.

2.23.1. Defining Sexual Misconduct:

Sexual harassment includes unwelcome verbal, written, or physical behavior of a sexual nature, targeted towards an individual because of that person's gender or based on gender stereotypes. Unwelcome behaviors include but are not limited to lewd jokes or remarks, verbal innuendos, repeated and unwelcome flirtations or advances, display of pornographic content with the intent to harass, indecent exposure, unwanted physical contact, threats of a sexual nature, repeated demands for an unwelcome romantic or sexual relationship and/or forced or non-consensual sexual contact. Sexual harassment also occurs when consent to unwelcome sexual advances is induced by blackmail with either positive or negative consequences for the victim’s education, employment, working or learning environment. Harassment may also include creating a generally hostile or demeaning environment for working and learning as retribution when sexual overtures and advances are rejected.

The complete policy pertaining to the education and awareness on prevention of sexual harassment can be found using the link Habib University's Prevention of Sexual Harassment Policy.

2.23.2. Initial Reporting & Designated Reporting Officers for Harassment Cases

Whenever current members of the Habib University community (defined as currently enrolled students, alumni of Habib, faculty members or staff under current contract, or on authorized leave, or invited guests of Habib University) believe that they either have been, or may be becoming, the targets of sexual harassment or sexual misconduct, they should report the incident as soon as possible but no longer than 365 calendar days since the last incident of sexual harassment or misconduct. The statute of limitations for initiating a report under this policy shall be no longer than 365 calendar days since the most recent incident of sexual harassment or misconduct. Complainants may choose to report either formally to the Habib University Sexual Harassment Inquiry Committee or they may initiate an informal conversation with a Designated Reporting Officer. If a formal report is filed directly with the Sexual Harassment Inquiry Committee, the Chair of the committee will refer the case to the appropriate Conduct Officer as outlined under this policy. In cases where the Complainant wishes to pursue the informal route initially, they should report the matter and have confidential conversations with any of the officially Designated Reporting Officers. For the most recent list of Designated Reporting Officers, please consult the Student Portal.

2.24. University Records

Habib University maintains students' educational records and ensures their right to access, and privacy of information maintained in these records. The following guidelines provide procedures for maintenance of and access to student educational records held by the University.

2.24.1. Definitions

For these guidelines, the terms used herein are defined as follows:

Education record – any record, document, or material maintained by the University (either directly or through a third party) that contains information directly related to the student, which is recorded on any medium including, but not limited to, handwriting, print, audio, video, tapes, or electronic storage.

However, the definition of education record does not include:

- Records that are maintained by university officials in their personal capacity and are not available to others;
- Records established and maintained by campus security;
- Employment records of the students employed by the University;
- Records maintained by the Health and Wellness Center when the records are maintained solely for the purpose of treatment of the student;
- Records maintained after the person is no longer a student, such as Alumni records.

Parent – the natural parent, guardian, or an agent nominated by the parent/guardian to act as such.

University Official – an individual employed by the University in an administrative, supervisory, academic, research, or support staff position; a member of the Board of Governors; an individual performing special tasks for the University, such as an attorney, or an auditor; a contractor,

consultant, volunteer, or other outside party providing institutional services; and an individual serving on an official University committee, such as the disciplinary committee, or assisting the University in the performance of official tasks.

Personally Identifiable Information – any information linked or linkable to a student that, alone or in combination, would allow an individual of the campus community, who does not personally know the student, to identify the student with reasonable certainty.

Legitimate Educational Interest – an individual has a legitimate educational interest in education records if the information or record is relevant and necessary to the accomplishment of some employment or other institutional tasks, service, or function.

Disclosure – to permit access to, to release, to transfer, or to communicate students' education records, or personally identifiable information contained in those records.

2.24.2. Disclosure to Parents

The University reserves the right to release educational records to parents of students as per the University's 'Parental Access and Notification' Policy. The University does not require a student's consent to disclose information related to

- The student's violation of local or federal laws;
- The policies of the University;
- Information about academic standing of the student;
- Any disciplinary action taken against the student.

2.24.3. Disclosure to Third Party

The University does not disclose information to any third party without the written consent of the student or otherwise covered in this policy. Some examples of requests for which the University does not require written consent of the student are listed below:

- If requested by a university office for legitimate educational use;
- If requested by another school where the student seeks or intends to enroll, or is already enrolled;
- Under Judicial Order or lawfully issued notice in a litigation against the University, or for disciplinary action against the student;
- In connection with the Financial Aid Program as necessary to determine eligibility for amount or conditions of the aid, or to enforce the terms and conditions of the aid;
- Needed for a collection of financial obligations to the University in case of delinquency of payment by the student;
- In case of threat of harm to self or others.

2.25. Official Communication with Students

Official communication with students will be through the University email.

Students are responsible for checking their university-provided email accounts frequently and consistently and for adhering to deadlines contained in emails from the University and/or its faculty or staff members.

The University is not bound to respond to a student via a non-University email account.

Communication with parents will be through courier, or through the phone. It is the student's responsibility to ensure all contact information is kept current by reporting any changes to the Office of Academic Systems & Registrar.

2.26. Habib Technological Services

Habib University has on board the top-notch technologies to fulfill the pedagogical, instructional research, administrative and mission development needs alongside an eye on the future to ensure continual improvement.

The IT resources include:

- A digital card for access to campus spaces
- A unique digital ID (single ID and password for all applications)
- Dedicated Wi-Fi network, and local area network
- Personal computers in labs and the library
- Printers/Photocopiers

2.26.1. Teaching and Learning Applications

In addition to that, Habib University uses several applications to support teaching and learning at the University, these include but not limited to:

S#	Application	Purpose	Link to Access
1	Student Portal	University SharePoint	https://habibuniversity.sharepoint.com/sites/Student/
2	Oracle PeopleSoft	Campus Management System	http://pscs.habib.edu.pk/
3	Canvas by Instructure	Learning Management System	https://lms.habib.edu.pk/
4	Stellic	Degree Management System	https://advisement.habib.edu.pk/
5	Unitime	Class Scheduling System	https://timetable.habib.edu.pk/UniTime/login.jsp
6	Koha	Library Management System	https://catalog.habib.edu.pk/cgi-bin/koha/opac-user.pl
7	Virtual Private Network	Secure Access to Systems from Off Campus	https://vpn.habib.edu.pk/portal/#!/login

As a user, students have access to valuable University IT resources, to sensitive data, and to internal and external networks. Consequently, it is important for students to act in a responsible, ethical, and legal manner. In general, acceptable use means respecting the rights of other computer users and the integrity of the physical facilities.

The University encourages the use of electronic communications to share information and knowledge in support of the University's mission of education, research, and public service, and to conduct the University's business. To this end, the University supports and provides interactive electronic communications services and facilities for telecommunications, mail, publishing, and broadcasting. A safe and civil environment is necessary for students to be successful in their educational pursuits.

To make the best use of the IT resources, an IT handbook is available on the Student Portal to guide students through the essential IT systems and services which can be used on any device, anywhere at any time to excel beyond the bounds.

2.26.2. Service Desk

The Service Desk is the central point of contact for students for any queries and issue pertaining to facilities and services provided by the institution. The desk receives, processes and responds to service requests calls during business hours. Service Desk can be reached at servicedesk@habib.edu.pk or calling service desk at extension **4224** or visiting https://servicedesk.habib.edu.pk/.

Students can also visit the Help Desk on the ground floor of the library, or on the third floor administration office during business hours.

3. The Habib Liberal Core

Habib University follows the Liberal Arts and Sciences model of education, which emphasizes not just specialization, but broad intellectual development that enables students to understand and contribute meaningfully to the world. This model encourages students to engage deeply with diverse disciplines – from philosophy and literature to mathematics and science – in order to develop well-rounded perspectives and adaptable thinking. It fosters curiosity, critical thinking, and ethical reflection by encouraging learning that connects ideas across fields. At Habib, this commitment is realized through the Habib Liberal Core: the foundation of the undergraduate experience and a reflection of our philosophy of *Yohsin* (thoughtful self-cultivation).

The Habib Liberal Core is designed to go beyond technical or professional training. It encourages students to become well-rounded individuals who can think clearly, communicate effectively, and act responsibly in a complex world.

All students, regardless of major, complete ten carefully designed courses as part of the Habib Liberal Core (HLC). These are distributed across seven distinct Forms of Thought: historical and social analysis, philosophical reflection, language and expression, formal reasoning, quantitative reasoning, scientific method and analysis, and creative practice. Inspired by Stanford University's breadth model and thoughtfully adapted to our regional context, these Forms of Thought bring structure and clarity to the HLC. Each one represents a different way of thinking and engaging with the world, ensuring a broad and meaningful intellectual experience.

What makes Habib's model distinctive is its postcolonial perspective. Students are encouraged to think critically about the world by recognizing both the global influences that have shaped it and the rich philosophical, cultural, and spiritual traditions of South Asia and the Islamic world. The Core invites students to explore key questions about history, identity, knowledge, and power – not only from Western viewpoints, but also from our own.

From their very first semester, students begin building essential academic skills in reading, writing, and communication through courses like Rhetoric and Communication. As they progress, they take classes such as *What is Modernity?*, *Hikma: Inheritance of Islamic Thought*, and *Jehan-e-Urdu*. Courses in scientific and quantitative reasoning develop analytical thinking, while creative practice courses allow students to express their ideas through writing, art, music, or technology.

The next section introduces the Forms of Thought and the courses offered within each.

3.1. Seven Forms of Thought

3.1.1. Historical and Social Thought (02 courses)

The extraordinary significance of historical and social knowledge in modern times arises from the unprecedented pace of change in modernity, as well as the growing complexity of modern societies. Across the disciplines, Habib University's faculty also demonstrates a remarkably coherent historical approach to both social scientific and humanistic knowledge. All students must take at least two (02) courses in Historical and Social Thought.

3.1.2. Philosophical Thought (02 courses)

The study of philosophy has traditionally been at the heart of all liberal core curricula. Philosophical thought enhances the student's reflective powers, essential to concept-generation and innovation in all fields. Furthermore, an understanding of the philosophical depth of a

tradition is crucial to a shared sense of inheritance. The Habib University faculty also widely share an interest in philosophy/theory. All students must take at least two (02) courses in Philosophical Thought.

3.1.3. Language and Expression (02 courses)

The development of linguistic and expressive abilities is widely recognized to be a key benefit of a liberal arts education, and language and literature have traditionally been as central to liberal core curricula as philosophy. Communicative power is one key to achieving success in all fields and disciplines. All students will be required to take a minimum of two (02) courses under this rubric.

3.1.4. Formal Reasoning (01 course)

Deductive thinking is crucial across fields and disciplines in both science and engineering, as well as the social sciences and humanities, and a deductive reasoning requirement is standard in higher and liberal education. Such a requirement also reflects the strength of our science and engineering faculty at the University. All students must take at least one (01) course in Formal Reasoning.

3.1.5. Quantitative Reasoning (01 course)

Numbers and quantities are an essential part of modern civilization and its forms of knowledge. Quantitative reasoning is the ability to interpret and contextualize large amounts of data and is an essential skill in all professions. All students must take at least one (01) course in Quantitative Reasoning.

3.1.6. Natural Scientific Method and Analysis (01 course)

The development of scientific methods and analysis is a fundamental feature of modernity and its forms of knowledge. A natural science requirement is standard in higher educational and liberal institutions. To ensure the scientific literacy of all our graduates, students will be required to take a minimum of one (01) course in *Natural Scientific Method and Analysis*.

3.1.7. Creative Practice (01 course)

Creativity is increasingly recognized as an important indicator of success, and it is often a required feature of the best higher educational curricula. Given the nature of our programs and faculty in both the School of Arts, Humanities, and Social Sciences (AHSS) and the Dhanani School of Science and Engineering (DSSE), we have an excellent opportunity to make creative practice a distinctive feature of the HU experience. All students must take at least one (01) course under this rubric.

The above core requirements are fulfilled through a combination of compulsory and elective courses. Given the University's unique pedagogical mission, we are committed to a common curricular experience for the HU student body.

The Habib Liberal Core Curriculum requirements are fulfilled through the following courses.

Form of Thought	Courses
Historical & Social Thought (02 courses)	• CORE 102 What is Modernity? • CORE 201 Pakistan and Modern South Asia
Philosophical Thought (02 courses)	• CORE 202 Hikma I • CORE 301 Hikma II OR any Philosophy Elective as designated by the University to fulfill this Form of Thought.
Language & Expression (02 courses)	• CORE 101 Rhetoric and Communication • CORE 121 Jehan-e-Urdu
Quantitative Reasoning (01 course)	• EE/354, MATH 310 Probability and Statistics OR • SDP 202 Quantitative Research Methods OR • any course designated to fulfill this Form of Thought,
Formal Reasoning (01 course)	• CS 101 Arithmetic Problem-Solving OR • CORE 111 Logical Problem-Solving OR • any other course designated by the University to fulfill this Form of Thought.
Natural Scientific Method & Analysis (01 course)	• CORE 200 Scientific Methods OR • CORE 203 Scientific Methods: A Biology Perspective OR • any other course designated by the University to fulfill this Form of Thought.
Creative Practice (01 course)	• All students are expected to take a university approved course in Creative Practice.

3.2. Course Descriptions

CORE 101 Rhetoric and Communication

A command of language and the ability to communicate effectively in speech and writing is essential to leadership. This is why eloquence in the broadest sense is one of the most highly valued benefits of a liberal arts education. The opening course in our Liberal Core is designed to develop the reading and presentation skills that our students will need throughout their lives. Our curriculum nurtures our students' rhetorical abilities throughout their college career, especially through the Liberal Core. *Rhetoric and Communication* is designed to first identify the various aspects of expression and eloquence as distinct and essential abilities, and to develop and improve them through application and practice.

Explaining the combination of powers involved in the ancient division of rhetoric into invention, arrangement, style, memory, and delivery, the Roman orator Cicero says in his classic text on rhetoric, De Oratore: "Since all the activity and ability of an orator falls into five divisions, he must first hit upon what to say; then manage and marshal his discoveries, not merely in orderly fashion, but with a discriminating eye for the exact weight as it were of each argument; next go on to array them in the adornments of style; after that keep them guarded in his memory; and in the end deliver them with effect and charm."

The material, classroom experience, and exercises of *Rhetoric and Communication* are designed to cultivate all five of these critical abilities, together with sophisticated reading skills. Class content will focus on compelling and relevant texts that anticipate the themes of the larger Liberal Core, and they are chosen to elicit opinion and encourage discussion and debate. As they develop their powers of reading seminal texts, students will practice and improve communication skills through regular writing assignments and presentations. *Rhetoric and Communication* will also feature the ethics of discourse and communication, so that tact and respect for the other become an essential part of students' experience and understanding of rhetorical ability.

CORE 102 What is Modernity?

No one in the medieval world thought they were 'medieval.' The belief that we live in a distinct period of world history – that of 'modernity' – sets us apart from all pre-modern peoples. It is a defining aspect of who we are, essential to our modern identities. It is thus imperative to the task of understanding ourselves and our world, and it is essential to the task of thoughtful self-cultivation. Habib University's pedagogical charter of *Yohsin* requires us to ask the questions: What is it to be modern? What is modernity?

Our 'modernity' is the very air we breathe. It encompasses, at an ever-gathering pace, all aspects of our lives. This is why the question of modernity has been a central concern across the range of disciplines and fields of the arts, humanities, and social sciences. This course will address the most essential elements of our global and regional modernity today. Beginning with an investigation of the emergence of this unique *world-historical identity*, we then turn to the historical formation of key structures and features of the modern in the following domains: political modernity, economic modernity, modernity and ecology, and modernity and religion. By the end of the semester the historical character and specificity of these foundational spheres of our present will be visible.

CORE 121 Jehan-e-Urdu (The World of Urdu)

The course aims to engage students in critically analyzing and appreciating Urdu language and Literature. Jehan-e-Urdu is based on the premise that Urdu prose and poetry, classical as well as

contemporary, is valuable and by focusing on this body of work in terms of its intrinsic value, this course avoids using the Urdu syllabus for ideological purposes.

A dynamic and broad-based view of the Urdu literary tradition forms the basis of this course, deliberately moving away from colonial theories used for categorization and grading of forms and styles. Contemporary literature is particularly focused on, without avoiding issues considered difficult or controversial.

CORE 200 Scientific Methods

How do we make decisions? How do we evaluate information? Should we trust all information? How should we decide which information is trustworthy? How do we recognize the limitations of a claim? These matters are not only for practicing scientists but form an important part of our daily lives. When information is more accessible than ever, how do we intelligently use available information to make choices? How should we develop our evidence-based decision-making skills? This course builds on the foundations of scientific methods of inquiry and works to apply them to our everyday lives. Utilizing a wide array of examples, it illustrates scientific methods and their applications.

CORE 201 Pakistan and Modern South Asia

Nation-states – including that of Pakistan – emerged in the region of South Asia in the middle of the 20th century. How did such a world-historical event come about? What has it meant for the peoples of this region? In short, what is the history of our present – what is the history of our regional modernity?

This question takes on a particular urgency in Pakistan as the region passes through the current period of crisis and change. With a significant focus on the emergence and trajectory of Indo-Muslim nationalism and the creation of Pakistan, this course will be an overview of the modern history of South Asia from the immediate pre-colonial historical scene, through the colonial period, including the rise of anti-colonial nationalism and decolonization, to the Cold War and the contemporary period of transformation and turmoil.

Apart from the main outlines of the history of modern South Asia, students will also learn to place the region's colonial modernity within the larger framework of modern history. Students will learn to identify major features of the colonial economy, politics, and society under which – especially after the Great Rebellion of 1857 – regional religious and other social reform movements emerged, nationalisms formed, and the dramatic transformation of regional languages and traditions took place, processes that continue into the present.

Students will learn to see contemporary conflicts, ideologies, identities, and structures as specific to the modern period rather than as natural cultural expressions, and they will begin to see regional cultures and societies themselves as historical entities.

CORE 202 Hikma I – History of Islamic Thought

After the interrogation of modernity in Core 102 and 201 in particular, Core 202 turns to a second metatheme of the Habib Liberal Core Curriculum: *the question of inheritance*. Ranging across philosophy, literature, history, law, and the arts, *Hikma I* is an encompassing survey of Islamic thought that seeks to give a sense of the historical and philosophical complexity and depth of the tradition, with significant reference to the region of South Asia.

In the module on 'Religion & Modernity' in CORE 102, and subsequently in our historical survey of socio-religious as well as nationalist reform and revivalist movements in the colonial period in CORE 201, students study the dramatic transformation and discursive constitution of 'religion'

and 'culture' in the colonial-modern period. Both regionally, as well as in the global modern, 'Islam' and its cultures and societies, have also become particularly sensitive and difficult regions of the discursive landscape.

CORE 203 Scientific Methods: A Biology Perspective

There are millions of problems in the natural world around us. Despite our best efforts, our perceptions of the problems and proposed solutions can be deceiving without facts and data to back it up. As a responsible member of society, it is our duty to ascertain what is good for the planet and humans and to make rational decisions, a scientific approach is invaluable. This course cultivates a step by step understanding and application of the scientific methods approach, from a biological science perspective. Using these skills, students get an opportunity to investigate and develop explanations for an original and relevant natural science research question.

SCHOOL OF ARTS, HUMANITIES & SOCIAL SCIENCES

Social Development and Policy

BSc (Honors) Social Development and Policy

4.1. Faculty

Faculty	Designation
Dr. Sahaab Bader Sheikh	Program Director & Assistant Professor
Dr. Aaron Patrick Mulvany	Associate Professor
Dr. Shama Dossa	Associate Professor
Dr. Asad Ur Rehman	Assistant Professor
Dr. Coline Ferrant	Assistant Professor
Dr. Muhammad Aatir Khan	Assistant Professor
Dr. Yasmeen Jamali	Assistant Professor
Dr. Hamad Ejaz	Assistant Professor
Dr. Muhammad Faraz	Assistant Professor
Abira Ashfaq	Associate Professor of Practice
Farhan Anwar	Assistant Professor of Practice
Maleeha Habib	Assistant Professor of Practice
Mohammad Moeini Feizabadi	Senior Lecturer
Tajreen Midhat Jafri	Lecturer
Gennaro Errichello	Global Fellow
Peter Olof Lagervist	Global Fellow
Uswa Ali Memon	Dean's Fellow
Muhammad Ashar Khan	Dean's Fellow
Iqra Kakar	Dean's Fellow
Amar Latif Qazi	Dean's Fellow

4.2. Program Description

The Social Development and Policy (SDP) Program at the Habib University is the first program of its kind in Pakistan. The Program intends to nurture an inter-disciplinary and comprehensive understanding of the complex problems of development and social change. The SDP Program equips its students with a thorough theoretical understanding together with hands-on and practical training. In addition to this, recognizing the complexity of social, economic and developmental issues, the Program seeks to offer courses that address such issues from a variety of perspectives. The Program both integrates and builds upon traditional social sciences disciplines like anthropology, economics, political science and sociology.

The Habib University SDP program represents truly an innovative and dynamic approach to some of the most important issues faced by our society both locally within the communities of our cities and rural areas; domestically in Pakistan as a whole; and beyond that in the international and global community we all inhabit.

"Development" has become a principal idea of our times and an object of aspiration for individuals, communities, and governments alike. One of the key questions we grapple with in the program is "How can we examine and engage with development as a multi-faceted process of social, economic, and political transformation while attending to context and ethical practice?" Responding to this key concern, the central vision of the Social Development and Policy (SDP) program at Habib University is to nurture an inter-disciplinary and comprehensive understanding of development and social change — one that is firmly rooted in an ethic of care and grounded in a sense of place. A careful, place-based understanding is deeply connected to the love of knowledge. Moreover, this sensibility is fundamentally tied to Habib University's philosophy of *Yohsin*, the practice of thoughtful self-cultivation.

To fulfill this vision, the undergraduate major in Social Development and Policy combines rigorous classroom training in the social sciences and humanities with reflective, experiential learning through a practicum and practice-based courses. The first program of its kind in Pakistan, it aims to give students new ways to approach the challenges of development at home and abroad. Students are exposed to seminal ideas in social and economic thought that will enable them to understand and critique the processes of economic growth, development, and social change. They explore how major development concerns such as poverty, gender inequality, urbanization, and human rights are shaped by historical forces and processes of political power, while also examining the role of states, development institutions, markets, and civil society in shaping human well-being.

The program integrates perspectives and skills drawn from a wide range of disciplines, including anthropology, history, economics, sociology, political science, religious studies, philosophy, literature, and Environmental Studies. In this way, the program equips students with inter-disciplinary thinking and analytical skills that will allow them to understand and tackle a range of problems and challenges in their professional and scholarly careers.

Offering critical insights into the core values of development and progress, the SDP major will train a new generation of social scientists who – like the best development practitioners – incorporate lived experience and vernacular sensibilities into policy design at the national and international levels.

4.3. Program Learning Outcomes

Students who graduate with a degree in Social Development and Policy will be able to:

1. Formulate appropriate research methods to pursue and produce meaningful social research.
2. Clearly and appropriately communicate disciplinary content across multiple media and to multiple audiences.
3. Synthesize multiple ways of knowing the lived environment and the experiences of the people who inhabit them.
4. Critically assess and/or design development, policy and other social interventions.
5. Recognize and appraise the formal and informal structures that organize and regulate societies.
6. Justify development practice and theory using a social justice perspective.
7. Reflect upon and critically assess one's own practice and the practices, theories and methods in a chosen field.

4.4. Requirements For the Major - Class of 2029

All students majoring in Social Development and Policy must complete 37 courses (129 credit hours). Students must maintain a minimum grade of C+ (2.33 GPA) in SDP major credit requirements to graduate with this degree.

The courses are divided in the following categories:

4.4.1. University Requirements

All students are required to take **ten** courses spanning seven forms of thought and action, called the Habib Liberal Core. Some courses in the major can also be counted towards meeting requirement of certain forms of thought in the core. For more details, please see the section on Habib Liberal Core in the catalog.

4.4.2. SDP Program Core

All SDP majors must complete the Social Development & Policy core curriculum consisting of **nine** courses.

1. SDP 101 Development and Social Change
2. SDP 103 Social Theory I
3. SDP 201 Qualitative Research Methods
4. SDP 202 Quantitative Research Methods
5. SDP 204 Public Policy I
6. SDP 206 Social Theory II
7. SDP 302 Data Analytics
8. SDP 303 Public Policy II
9. SDP 3xx/4xx International Political Economy Elective

4.4.3. SDP Electives

Students must complete a minimum of six SDP electives, including at least two upper-level SDP electives (300- or 400- level).

4.4.4. Summer Practicum

The practicum's main purpose is to enable students to acquire skills and competencies in their interaction with individuals, communities, development agencies, and organizations. Moreover, students are expected to contextualize their learning as the practicum allows students to select agencies working on a range of thematic areas. Students will complete a specified number of hours and meet other practicum requirements. Although every practicum experience will be different, learning outcomes will include building networks, engaging in advocacy, and working with various stakeholders.

All SDP majors are required to complete a Practicum, which is an application of the skills and competencies learned in SDP program. This Practicum must be a minimum of six (06) weeks and can be broadly construed in consultation with an assigned practicum adviser.

4.4.5. Capstone / Research Seminar

All senior students in the Social Development and Policy program must enroll in at least one (1) Senior Research Seminar coded at the 400-level. For most students, successful completion of the requirements of this course will fulfill the capstone requirement.

4.4.6. Thesis or Upper-Level Elective

Students desiring more rigorous research may pursue a thesis, which will be completed as an independent, supervised study completed in their final semester. Students pursuing the thesis must have a minimum CGPA of 3.5. Thesis is a much more substantial research project in which the student will explore a topic, building on existing knowledge by using qualitative and/or quantitative techniques. Thesis writing is an exercise in developing in-depth research that speaks broadly to the social, cultural, and/or economic issues of contemporary societies. The Honors Thesis must be guided by a committee comprising of at least one (01) faculty member. Students intending to complete an honors Thesis must declare their intention at the beginning of their final academic year and submit a prospectus at the end of their penultimate semester. To be considered for a thesis with distinction, a student must enter their final semester with a minimum CGPA of 3.5 and have earned a minimum grade of A- in both their senior/research seminar and thesis.

In case students are not or not able to pursue thesis, they are required to take an SDP upper-level elective.

4.4.7. Regional Language Requirement

All SDP majors must also fulfill a vernacular language requirement by successfully completing at least three (03) sequential courses in a single language, for example Sindhi or Punjabi. For full language offerings, refer to the Comparative Humanities Program Section in this Catalog.

4.4.8. Free Electives

All SDP majors are required to take five (05) courses as free electives resulting in a total of minimum 15 Credit Hours. Free electives are min 2 credit hour each - these electives are to be taken so that over-all credit-hour requirement of 129.

4.4.9. AHSS Electives (Non-SDP)

All SDP majors are required to take two (02) AHSS courses as electives. These courses should not be offered by the SDP program.

4.5. Requirements Table for the Social Development & Policy Major (Class of 2029)

Course Category	Course	Min. No. of Courses	Min. Credit Hours
University Requirements	Habib Liberal Core	10*	36*
SDP Program Core	SDP 101 Development and Social change	01	04
	SDP 103 Social Theory I	01	04
	SDP 201 Qualitative Research Methods	01	04
	SDP 202 Quantitative Research Methods	01	04[1]
	SDP 204 Public Policy I	01	04
	SDP 206 Social Theory II	01	04
	SDP 302 Data Analytics	01	04
	SDP 303 Public Policy II	01	04
	International Political Economy Elective (IPEE)	01	03
SDP Program Electives	Lower-Level Electives	04	18
	Upper-Level Electives	02	
Field Practicum	FP/SDP 302 Field Practicum	01	04
Regional Language Requirement	Three sequential courses in a vernacular language	03	12
Capstone / Research Seminar	Research Seminar + Capstone Report/Thesis Proposal	01	03+ 01
Thesis or Elective	Thesis Report (IS) or Upper-Level Elective	01	03
Electives	AHSS Electives (*non-SDP)*	02	06
	Free Electives***	05	15
Overall		**37**	**129**

[1]The course is double-counted towards the Quantitative Reasoning requirement of the Habib Liberal Core.

4.6. Course Descriptions

The SDP Major offers nine (09) program core courses for Class of 2029, listed below.

4.6.1. Required Courses

SDP 101 - Development and Social Change

Credit Hours: 4
Prerequisites: None
Fulfills: SDP Core

This is an introductory course in social development and provides an overview of ideas, theories, and concepts as well as a discussion on critical development challenges. This includes issues of urbanization,food security, migration, intersectionality, and gender, as well as wars disasters, and conflict. The purpose of this course is to answer key questions about development and social change by introducing students tothe history, theory, and the contemporary practice of development. The concept of 'development' will bedefined within the broader field of social sciences. We will be shifting the analytic focus from instrumental outcomes of development policies to the meanings, implications, and consequences they have as expressions of societal beliefs and values.

SDP 103 - Social Theory 1

Credit Hours: 4
Prerequisites: None
Fulfills: SDP Core

Social Theory provides students with the appropriate tools to make sense of and understand social reality. The ultimate goal of Social Theory is to enable students to elaborate, propose, and carry out principled and reasoned interventions in different contexts, in this way firmly linking reflections on social theory with practice in policy planning and making. Questions central to this course are: 1)what do we mean by theory and why do we use it; 2)what do we mean by social reality, and what are its main features and characteristics; 3)what is the role of theory and theorization in appreciating social reality; 4)what are the context-dependent features of social theorizing, with specific attention to the historical milieu and geographical origin that characterizes different social theories; 5)and what is the impact that theories themselves exert on social reality?

SDP 206 - Social Theory 2

Credit Hours: 4
Prerequisites: SDP 103 – Social Theory 1
Fulfills: SDP Core

Social Theory provides students with the appropriate tools to make sense and understand social reality. The ultimate goal of Social Theory is to enable students to elaborate, propose and carry out principled and reasoned interventions in different contexts, in this way firmly linking reflections on social theory with practice in policy planning and making. Questions central to this course are:

- What do we mean by theory and why do we use it;
- What do we mean by social reality, and what are its main features and characteristics;

- What is the role of theory and theorization in appreciating social reality;
- What are the context-dependent features of social theorizing, with specific attention to the historical milieu and geographical origin that characterize different social theories; and what is the impact that theories themselves exert on social reality?

SDP 201 - Qualitative Research Methods

Credit Hours: 4
Prerequisites: SDP 101 – Development and Social Change
Fulfills: SDP Core

This course, a core class for all SDP majors, is designed to introduce students to key approaches to qualitative research design and methodologies. You will be introduced to techniques including participant observation, interview and focus group, fieldwork, survey, and discipline-appropriate writing through theoretical readings and hands-on assignments and/or field exercises. We will also study and debate the ethical complexities of conducting fieldwork and implementing research in a range of contexts.

The readings will serve as a guide to theoretical debates and critiques that resulted in the transformation of social science methods from colonial origins in late 19th century Europe and America to contemporary debates about the role of the discipline in shaping and potentially breaking western intellectual hegemony. We will analyze the different methods of divesting social sciences like anthropology from colonial practices by reframing the relationship between the researcher and subject (informants, interlocutors, teachers, etc). How can we break down the hierarchical relations between ourselves and our subjects who become objects of study?

SDP 202 - Quantitative Research Methods

Credit Hours: 4
Prerequisites: None
Fulfills: SDP Core, and Quantitative Reasoning (QR) Form of Thought under the Habib Liberal Core (HLC).

With rapid technological advancements, our lives have been inundated with large amounts of data. If properly analyzed, data analysis can lead to powerful insights and strategic advantages. Modern decision- makers need analytical skills that are useful in problem-solving and improve decision-making, both at an individual level and at an organizational level.

This course is designed to provide students with a solid foundation of core elements in statistics, probability, and econometric principles. It will provide students both theoretical and applied knowledge of the main ingredients of rigorous statistical analyses including hypothesis testing and regression analysis. Using statistical software, students will learn to apply methods learned in class and write formal reports.

This course together with Qualitative Research Methods and Data Analytics will form an ideal platform for students who eventually want to go into research and development-oriented private or public institutions, or those who want to pursue graduate studies that demand strong quantitative skills.

SDP 204 - Public Policy I

Credit Hours: 4

Prerequisites: SDP 101 – Development and Social Change, SDP 201 – Qualitative Research Methods, SDP 202 – Quantitative Research Methods, and SDP 203 – Social Theory.

Fulfills: SDP Core

The purpose of this course is to provide students with a critical and rigorous introduction to the world of public policy. This involves understanding the institutional context of public policy-making, fundamentals of policy discourse, and key debates, surrounding policy writing, development, implementation, and evaluation. The course aims to deepen students' understanding of public policy processes that are constrained by complex interactions between political preferences, institutions, and limited resources.

This is a foundational course on public policy, serving as one of the mandatory core classes in the Social Development and Policy Program. While students were introduced to the importance of developing policies in Development and Social Change, this has served primarily to uncover social, cultural, economic, or political implications of policy instruments themselves. This course however is aimed at the link between policy and governance, notably on the processes of policy-making, on the roles of government agencies/departments and on the administrative aspects of policy design, implementation and audit/evaluation.

SDP 303 - Public Policy II

Credit Hours: 4

Prerequisites: SDP 101 – Development and Social Change, and SDP 204 – Public Policy I.

Fulfills: SDP Core

The course Public Policy II (PP2) builds on the fundamental concepts acquired in the course Public Policy I (PP1). The central role of the course is to provide an in-depth understanding of policy-making by looking at policy-based public sector interventions across countries, with a particular focus on Pakistan, in terms of how they have been framed and what results have been achieved as a result of the evolving notions of citizenship and governance being incorporated into public policy.

The program of Social Development and Policy aims to ensure that students have a broad understanding of the policy fields that intersect with social, economic, and environmental aspects of development. Students were first introduced to the importance of development policies in the course Development and Social Change. In the course PP1, they were exposed to the various theoretical constructs that have evolved to understand the complicated and multi-dimensional political arena defining the political economy and public policy space. They related that understanding with real-life policy scenarios to further refine their comprehension of the subject. Building on these courses, Public Policy II focuses on governance mechanisms employed by governments that are shaping public sector delivery. They will get an understanding of the instruments constructed in the policy formulation and decision-making processes such as Policy Briefs, Policy Papers, and Legislative Acts. The course also aims to provide an opportunity for students to learn specific fields of public policy with direct bearing on social development, locally and globally. Students who are interested in the field of policy studies are encouraged to take complementary courses in the stream of governance and policy-making in order to garner a greater depth of understanding of diverse fields of social policy.

SDP 302 - Data Analytics

Credit Hours: 4
Prerequisites: SDP 202 – Quantitative Research Methods.
Fulfills: SDP Core

The prevalence of data including big data into every facet of our lives and the key role data has in decision- making by humans for themselves and the planet's future, has brought forth a dire need for statistical literacy and strong data analysis skills. This course builds upon the theory and applied skills learnt in the 200-level Quantitative Research Methods course. Using basic concepts of statistical estimation and hypothesis testing students will learn the fundamental ideas of data analysis methods. It takes students behind the scenes and exposes them to the machinery underlying regression methods and teaches them how to diagnose and correct real-world data issues. Using statistical software, students will have the opportunity to apply various techniques to correct situations in which model assumptions fail, conduct program and policy evaluations, and perform data simulations.

Some of the topics include Non-linear Models, Cross-Sectional Data methods (Linear Probability Model, Logit, Probit for Limited Dependent Variables and Tobit for censored data), Panel Data techniques (fixed and random effects), and Instrumental Variables estimation including using Monte Carlo simulations, Diagnostics (such as multicollinearity, heteroscedasticity, model specification, etc.)

This course together with Quantitative and Qualitative Research Methods will form an ideal platform for students who eventually want to go into research and development-oriented private or public institutions, or those who want to pursue graduate studies that demand strong research skills.

XXX 3xx/4xx - International Political Economy Elective (IPEE)

Credit Hours: Minimum 3
Prerequisites: SDP 101 – Development and Social Change, SDP 201 – Qualitative Research Methods, and SDP 202 – Quantitative Research Methods.
Fulfills: SDP Core

Students majoring in SDP will have to fulfil this requirement as a mandatory elective, by completing one third-year elective course, which tackles the dynamics of International Political Economy. Various options will be offered yearly to allow students to complete this requirement.

4.6.2. SDP Electives

Different SDP electives are offered each semester. The following electives have been offered in prior semesters by the SDP program:

- ANT 101 Introduction to Cultural Anthropology
- ANT 412 Anthropology of Trade
- DEV 200 Development and Environmentalism
- DEV 211 Food Security
- DEV 212 Urban Sustainability
- DEV 229 Gender Inclusion & Analysis in Development Policy
- DEV 322 Advanced Development Practice: Program Planning and Design

- DEV 327 Post Development and Alternatives to Development: Critical Theory, Policy and Practice
- ECON 101 Principles of Microeconomics
- ECON 121 Principles of Macroeconomics
- ECON 222 Environmental and Natural Resources Economics
- ECON 435 Theories of Social Capital and Civil Engineering
- SDP/CND 223/253 Introduction to QGIS in Research and Communication
- SDP 3xx Time Series
- SDP 411 Advanced Topic in Qualitative Research Design
- SDP 412 Applied Methods in Quantitative Research
- RELS/ANT 100 Jamal: Islamic Aesthetic and Design.

Communication and Design

BA (Honors) Communication and Design

5.1. Faculty

Faculty	Designation
Christie Marie Lauder	Program Director, Assistant Professor
Jovita Alvares	Assistant Professor
Muneera Batool	Assistant Professor
Rohama Malik	Assistant Professor
Nighat Sultana Chaudhry	Professor of Practice
Mirza Muhammad Amir	Associate Professor of Practice
Syeda Mehwish Zara Zaidi	Associate Professor of Practice
Tazeen Hussain	Associate Professor of Practice
Abdul Rafay Mahmood	Assistant Professor of Practice
Arsalan Pareyal	Assistant Professor of Practice
Hasan Reza Habib	Assistant Professor of Practice
Haya Fatima Iqbal	Assistant Professor of Practice
Isma Gul Hasan	Assistant Professor of Practice
Mariya Azhar Karimjee	Assistant Professor of Practice
Ahsen Ali	Lecturer
Damian Kim Lahey	Global Fellow
Zoha Batool Khan	Dean's Fellow

5.2. Program Description

The Communication and Design (CND) Program at Habib University (HU) offers a unique combination of skill–based practical training in design and media, along with rigorous theoretical grounding in both disciplines. The program seeks to combine these two interdependent fields in dynamic and innovative fashions, by offering its students a truly interdisciplinary experience that integrates historical investigation, critical analysis, aesthetic practice, and social engagement. It thus offers students the possibility not only to better understand and create representations of

the world, but also to use that knowledge and awareness to intervene and bring change in a variety of thoughtful and meaningful ways.

Students begin their journey in CND with a common foundational year, before splitting into two primary concentrations – either Design or Communication - for Years Two and Three. They also choose from a list of elective courses to fulfil requirements for a secondary concentration in the other discipline. Students then come back together in Year Four for a transdisciplinary practicum and their capstone projects.

5.3. Program Learning Outcomes

Students who graduate with a degree in Communication & Design, will be able to:

1. **Practice** - Demonstrate an understanding of a variety of practice-based approaches to developing appropriate and innovative representations and interventions.
2. **Research** - Deploy diverse research and methodological skills and tools to understand complex social and technological milieux.
3. **Interdisciplinarity** - Display a capacity to think beyond disciplinary epistemes and work collaboratively and empathetically with other peers.
4. **Theory in Context** - Deepen their awareness and sensitivity to the complex and long-term systemic, ethical and political implications of their work - particularly in their immediate context - through exposure to theory.
5. **Process and Skill** - Develop their own unique artistic voices and processes via rigorous engagement with a variety of mediums.

5.4. Requirements For the Major – Class of 2029

A BA (Honors) in Communication & Design (CND) requires completion of 40 courses and with a minimum CGPA of 2.33. The program offers two concentration tracks (Primary and Secondary) – Design and Communication. If the primary concentration is in Design, then the secondary concentration will be in Communication and vice versa.

- All students majoring in CND with primary concentration in Communication and secondary concentration in Design, are required to complete a total of 40 courses (38 + 1 summer practicum + 1 internship), 129 credit-hours requirements.
- All students majoring in CND with primary concentration in Design and secondary concentration in Communication, are required to complete a total of 40 courses (38 + 1 practicum + 1 internship), 132 credit-hours requirements.

The courses are divided in the following categories:

5.4.1. University Requirements

All students are required to take **ten** (10) courses spanning seven forms of thought and action, called the Habib Liberal Core. Some courses in the major can also be counted towards meeting requirement of certain forms of thought in the core. For more details, please see the section on Habib Liberal Core in the catalog.

5.4.2. Communication & Design Program Core

Communication and Design students, regardless of concentration, take the same set of ten (10) core courses, four (04) within their first year.

5.4.3. Primary and Secondary Concentrations

All CND majors will have a primary concentration in one area (either Communication or Design) and a secondary concentration in the other. The primary concentration includes seven (07) required courses and the secondary concentration requires four (04) elective courses.

5.4.3.1. Communication as Primary Concentration & Design as Secondary Concentration

Students who pursue Communication as their primary concentration will develop a mastery of the production process from the conception of an idea through post- production, both in new and traditional media. This includes working with fictional and non-fictional narratives, the latter taking center stage in documentary filmmaking and journalism courses. Along with these skills, students can expect to receive training in media studies and film theory, with a contextualized focus on aesthetics and the analysis of cultural production. The Primary Concentration in Design constitutes of seven (07) required courses.

A student with a primary concentration in Communication will automatically have Design declared as the Secondary Concentration. Students would be required to take 01 upper-level and 03 lower-level elective courses, constituting to 04 DES electives, offered by the program.

5.4.3.2. Design as Primary Concentration & Communication as Secondary Concentration

Students who choose to pursue Design as their primary concentration will find themselves developing skills in graphic design, user experience design, human-centered design, systems thinking and designing interventions for social change. Along with practical skills, students will develop strong theoretical and research foundations in design studies, particularly at the intersection of technology and design, focusing on the political and ethical implications of new technology on our daily lives, and on how design can contribute to this discourse by provoking reflection and imagination. The Primary Concentration in Design constitutes of 07 required courses.

A student with a primary concentration in Design will, automatically have Communication declared as the Secondary Concentration. Students would be required to take 01 upper-level and 03 lower-level elective courses, constituting to 04 COM electives, offered by the program.

5.4.4. Free Electives

All CND majors must take seven (07) courses as free electives resulting in a minimum 21 Credit Hours – these electives are to be taken so that over-all credit-hour requirement of 129 (DES) or 132 (COM) is met.

5.4.5. Summer Requirements

5.4.5.1. Directed Study / Practicum

A 4-week apprenticeship with an industry professional or an individual media project. OR A 4-week research assistantship with a Habib University professor.

5.4.5.2. Summer Internship/Summer Research Project

An 8-week internship with an approved industry organization or professional with a tangible plan and goal. OR An 8-week research project under the supervision of a CND professor (or approved external practitioner/ academic).

5.5. Requirements Table for the Communication & Design Major (Class of 2029)

Course Category	Course	Min. No. of Courses	Min. Credit Hours
University Requirements	Habib Liberal Core	10	35
CND Core (10 courses)	CND 101 Materials and Practices	01	04
	CND 102 Ideation and Processes	01	04
	CND 103 Introduction to Design and Media	01	04+01
	CND 104 Performing Narrative	01	03
	CND 1xx Introduction to Storytelling	01	03
	CND 106 Forms of Inquiry	01	02
	CND 301 Image, Text, Movement	01	04
	CND 402 Transdisciplinary Practicum	01	03
	CND 401 Capstone I	01	04
	CND 403 Capstone II	01	04
Primary Concentration in <u>one</u> of the two areas: Design or Communications (07 courses)[1]	**Primary Concentration in Communication**		
	COM 201 Production Fundamentals I	01	04+01
	COM 202 Communication and Culture	01	02
	COM 203 Production Fundamentals II	01	04+01
	COM 204 Elements of Aesthetics I	01	03
	COM 301 New Media and Journalism	01	04
	COM 302 Elements of Aesthetics II	01	03
	COM 304 Contextualizing Media	01	02
	Primary Concentration in Design		
	DES 201 Designing for Interactions	01	04+01
	DES 202 Design, Technology and Society	01	02
	DES 203 Designing for and with People	01	04
	DES 204 Research in Design	01	02
	DES 302 Design and Social Change	01	02
	DES 303 Design Fictions and Provocations	01	04
	DES 304 Design Politics and Ethics	01	02

Course Category	Course	Min. No. of Courses	Min. Credit Hours
Secondary Concentration electives (04 courses)[2]	**Secondary Concentration in Communication**		
	Lower-level COM elective	03	09
	Upper-level COM elective	01	03
	Secondary Concentration in Design		
	Lower-level DES elective	03	09
	Upper-level DES elective	01	03
CND Core – Summer Requirements (02 courses)	Directed Study/Directed Practicum[2] (Year 2)	01	01
	Summer Internship/Summer Research Project (Year 3)	01	02
Electives (07 courses)	University-wide Free Electives	07	21
Overall		**40**	**132/129**

[1] The Primary Concentration is to be done in either of the two areas; 1) Communication, or 2) Design.
[2] Depending on the Secondary Concentration, students will be required to complete 3 lower-level electives and 1 upper-level elective course in the respective Concentration.

5.6. Course Descriptions

5.6.1. Required Program Core Courses

In CND program, there are a total of 10 program CORE courses that are listed below:

CND 101 - Materials and Practices

Credit Hours: 4-0
Prerequisites: None
Fulfills: CND Core

Fundamental to practice in the creative art and design disciplines is the ability to see phenomenon in the real world differently, to be able to use observation as the basis for imagination and creative insight, and to materialize both observed and imaginary phenomenon into basic material and visual artifacts, or prototypes. This studio course aims to give incoming freshmen students the foundational skills, tools, and techniques in creative observation, ideation, and prototyping that they will build on in subsequent semesters in more advanced courses.

Students will be introduced to a range of drawing and prototyping techniques through a range of mediums. The course will start from basic 2D drawing and will transition after mid-semester towards technical drawing and crafting 3D models from various materials. Students will also cover foundational concepts and frameworks in working with gestalt relations, perspective, light, texture, color, framing etc., and engage with readings and important critical texts that introduce them to discourses in design around these concepts.

CND 102 - Ideation & Processes

Credit Hours: 4-0
Prerequisites: None
Fulfills: CND Core

In this class, we will investigate and explore the creative process in order to generate ideas for art, tech and design projects and more. The course will show how different concepts, techniques, and methods can inspire, inform, and bring depth to what one ultimately creates and prototypes. Students will expand their arsenal of design and research skills, learn how to think critically about their audience, content, form, and processes, as well as, understand the importance of utilizing more than one research and design strategy. The course will introduce a number of tools and techniques through hands-on exercises and assignments to really drive home how iterative, messy and exciting the creative process can be!

CND 103 - Introduction to Design and Media

Credit Hours: 4-1
Prerequisites: CND 101 – Materials and Practices, and CND 102 – Ideation & Processes
Fulfills: CND Core

Building on the knowledge and skills that students acquired during their first semester, this course focuses on combining design principles and research methods with digital forms of making. The course will introduce a number of tools and software through class exercises and assignments to help students develop a strong conceptual and theoretical grounding, while the lab component will strengthen the students' technical skills. The course is divided into two modules, namely, Image and Text and Time, Space and Sound. Module one will focus on understanding and exploring software like photoshop, illustrator and InDesign while module two will focus more on 3D and animation software like Sketchup, Premiere, Aftereffects, Audacity and Cinema 4D.

CND 104 - Performing Narrative

Credit Hours: 3-0
Prerequisites: CND 101 – Materials and Practices, and CND 102 – Ideation & Processes
Fulfills: CND Core

This course introduces students to the nature, elements, and structure of narrative, through embodiment. Students will improvise and explore the different elements and vocabularies used in postmodern theatre to stitch narratives of their choice. In this vein, we will be using "Viewpoints" - a method for training performers, building ensembles, and creating movement for the stage. Working in tandem, we will be using "Moment Work" - a dramaturgical technique of improvising and devising theatrical narratives. Through Moment Work we will dissect the various elements of the stage (like acting, character, movement, props, costumes, lights, dialogue etc), and explore their narrative potential and narrative flexibility i.e. how they change meaning, significance and presence with the interaction of other elements of the stage. In the end, students will create devised and new works which could take the following forms: a theatrical play, performance installation, short film - which they will perform/exhibit for an external audience.

CND 10X – Introduction to Storytelling

Credit Hours: 3-0
Prerequisites: None
Fulfills: CND Core

This is a discussion-based course designed to teach students how to read like a writer, to develop their own literary tastes and preferences, and to find a narrative voice. We will study a range of modern and contemporary short stories (and the occasional novel excerpt, a film, and some pop music) to understand the technical elements that stitch stories together, such as point of view, plot, character, and dialogue. Our thinking will be guided by short essays on the craft of writing. We will also consider more abstract elements such as voice, mood, and impact, and we will reflect on how fiction is able to invoke wonder, humor, alarm, fascination, and more. Once we've understood the technical elements of storytelling, we will turn our attention to authors who bend these elements in unexpected ways and tell stories in unconventional forms.

CND 106 - Forms of Inquiry

Credit Hours: 2-0
Prerequisites: None
Fulfills: CND Core

This course provides a conceptual framework for several major developments in the arts and humanities extending from the close of the 19th century to the present. It will introduce students to texts, movements, and thinkers, with a focus on reciprocal influences, appropriations, and resulting hybrid forms that characterize much South Asian, European and American aesthetic work. Traversing between the two halves of the 20th century, this course explores various kinds of modernisms and avant-gardes in design, literature, cinema and visual arts, and the consequences of World War II on them. In addition, it examines the multiple ways arts have tackled political engagement and propaganda, and taken part in the progressive loss of centrality of the West in the global arena. Divided 3 into three parts, it focuses on nation-based case studies [Brazil, India and Pakistan, Japan] as well as on some of Europe's and America's most significant cultural contributions such as, Pop Art and Situationism.

CND 301 - Image, Text, Movement

Credit Hours: 4-0
Prerequisites: CND 101 - Materials & Practices, CND 102 - Ideation & Processes
Fulfills: CND Core

A skill-based studio course for Communication and Design students that centres fluency and consistency in visual language through experimentation and rigorous practice. This course will ask students to reflect on what concerns them as practitioners and identify the themes that occupy them. They will explore these over the course of the semester through the skills taught to them in workshops and demonstrations, culminating in a final project which showcases at least three techniques they've learnt through the semester.

CND 402 - Transdisciplinary Practicum

Credit Hours: 3-0
Prerequisites: None
Fulfills: CND Core

In addition to their capstone, we suggest a final studio course for their seventh semester, the

transdisciplinary practicum, where all students come together once again to work on a significant semester- long project in mixed groups. The idea behind this is to foster collaborative skills and have them all spend a final semester sharing what they've learned in their respective concentrations together. Being that this will be a significant four-month long project, it may also be the opportunity for them all to work on a project brought in from industry. The outcomes of working on an external project for industry would also fit the larger scope we have in mind for the transdisciplinary practicum. There could be a range of deliverables coming from each group that traverse design and media.

CND 401 - Capstone I

Credit Hours: 4-0
Prerequisites: None
Fulfills: CND Core

In this class, we will seek to investigate the processes involved in transforming our ideas via research and practice into things that exist in the world. We will dive deep into research in art, media and design, with the intention of using them to come up with novel ideas that complicate our understanding of the world, provide a solution to a problem, or simply help manifest our deepest obsessions in the form of representation in the physical world. We will seek to create a community within this classroom, as we discuss, argue, and reflect on the ideas of others with generosity, rigor, and in the spirit of encouragement, building up towards a comprehensive final research proposal for a project that will then be completed in Capstone II.

CND 403 - Capstone II

Credit Hours: 4-0
Prerequisites: Capstone I
Fulfills: CND Core

In this studio, students will continue and complete their major capstone project for the CND major.

5.6.2. Required Concentration Core Courses – Communication

COM 201 - Production Fundamentals I

Credit Hours: 4-1
Prerequisites: CND - 101 Materials and Practices, and CND 102 - Ideation and Processes

This modular course will introduce students to the fundamentals of media production by focusing on individual skills that constitute the various steps in the production lifecycle, with a focus on how they all contribute to storytelling. This course delves into the following areas in four modules: 1) Introduction to Production Fundamentals; 2) Writing for the Screen – Scripted narrative; 3) Introduction to Cinematography; and 4) Introduction to Sound.

COM 202 - Communication and Culture

Credit Hours: 2-0
Prerequisites: CND - 101 Materials and Practices, and CND 102 - Ideation and Processes

This course introduces students to the conceptual frameworks, theoretical foundations and historic precepts that constitute the broader field of Communications Studies. Broadly looking at the intersection of society, culture, media production and consumption, the course aims to develop in students a sound fundamental understanding of the field as it exists today, as well as

the journey it has taken to get there.

COM 203 - Production Fundamentals II

Credit Hours: 4-1

Prerequisites: COM 201 - Production Fundamentals I

The aim of Production Fundamentals 2 builds upon the knowledge gained from Filmmaking modules taught in Production Fundamentals 1 and introduces students to new media production skills they will need to complete the execution of their projects and in developing their practice as filmmakers. This course will focus on modules covering the fundamentals of Production Sound, an introduction to Documentary Production processes, an introduction to Directors creative vision, the basics of Post Production. The course will aim to Finish building the foundation of student's skill set of Filmmaking with the help of practical demonstrations, hands-on exercises, and in-class assignments, film projects, as well as foundational theoretical knowledge about these taught practices. Through its four modules the course delves into: 1) Writing for the Screen – Documentary Narrative; 2) Directing; 3) Digital Editing; and 4) Production Design.

COM 204 - Elements of Aesthetics I

Credit Hours: 3-0

Prerequisites: COM 202 - Communication and Culture

The course operates at the nexus of media theory, history and practice, and introduces students to these elements through analysis of media artifacts. Taking a non-chronological approach, the course uses topics in film history, theory and film movements, examining them within the context of a particular element in the filmmaking process. The first part of this two-part course will examine the media traditions from North-America and Europe.

COM 301 - New Media and Journalism

Credit Hours: 4-0

Prerequisites: COM 203 - Production Fundamentals II

This is an introductory level multimedia journalism course that will teach students the basics of journalism and news gathering, fact checking, field reporting and news editing skills. In present day journalism, finding a good story is not enough. It’s also about finding engaging and innovative ways to present news through various mediums in a world where attention spans are shorter than ever, and the devices on which we consume news are constantly transforming. This course will form a foundation for students who aspire to understand how the news and newsrooms work. There are two kinds of readings in this class: works of journalism (news, explanatory reporting, personal essays, literary nonfiction) and works about journalism (theory, criticism, analysis).

COM 302 - Elements of Aesthetics II

Credit Hours: 3-0

Prerequisites: COM 204 - Elements of Aesthetics I

The course carries forward the work started in Elements of Aesthetics I and introduces students to these elements through analysis of media artifacts. The second part of this two-part course will examine media traditions from the non-Western world, specifically focusing on South Asia.

COM 304 - Contextualizing Media

Credit Hours: 2-0
Prerequisites: COM 202 - Communication and Culture.

This survey course examines the history of print, radio, TV, film and digital media, examining their impact on the socio-political history of Pakistan in order to contextualize and localize the history of various communication mediums and their importance and impact at the societal level.

5.6.3. Required Concentration Core Courses – Design

DES 203 - Designing For and With People

Credit Hours: 4-0
Prerequisites: CND - 101 Materials and Practices, and CND 102 - Ideation and Processes

This studio course will build on the prior studio, pushing students to employ field research and qualitative methods to study, analyze and understand local communities, and then use their findings to generate insights and ultimately, develop product and service interventions that will aid those communities.

In this studio-based course students will develop an understanding of core concepts of Human Centered Design (HCD) and basics of Service Design through a practice-based approach. Students will immerse in a classic wicked problem, and enrich their contextual understanding through field work. They will engage in methods of research that include participatory, observational, interviews, self- reporting and generative. All research in studio will result in designing and prototyping interventions that will range from products to services.

DES 201 - Designing for Interactions

Credit Hours: 4-1
Prerequisites: DES 203 - Designing For and With People

It will introduce students to the fundamental concepts, principles, frameworks, tools and practices of interaction and user experience (UX) design. Interaction design lies at the intersection of many different disciplines and methodologies. Therefore, it is only natural that designers learn principles that are extracted from disciplines like Industrial Design, Engineering and Communication Design. Historically, especially in Pakistan design in general has had the reputation of offering 'cosmetic' value to works of engineers, writers and now technologists. Design traditionally only comes up towards the end of the project. Although this thinking has been changing, the shift is painfully slow. Besides a shift in thinking of the business and corporate world this shift will come from designers themselves. Only designers who see design as an integral part of everyday life, innovation, systems, technology and resulting solutions will be able to create that shift.

This course will be a glimpse of this journey for students where they see, understand and practice design that has its effects from individuals to larger groups. This understanding will come through developing an understanding of how humans interact with the world around them, their physical and mental processes and limitations.

DES 202 - Design, Technology & Society

Credit Hours: 2-0
Prerequisites: DES 204 - Research in Design

This seminar course will introduce students to different theories and perspectives on technology

important to designers from a range of fields and disciplines, including philosophy of technology, science and technology studies and material culture, to think around the nature and scope of design practice in the modern world.

As humans (designers, engineers, business managers, computer scientists, marketers) shape products, services and technologies around us; these products, services and technologies shape us in turn. Technology affects how we live, how we behave, how we interact with other humans, and even how we perceive the past, present and future. In 2021, two decades into the 21st century, living in a metropolitan city that Karachi is, we are surrounded by technology. Whether that is our smartphones, fans, refrigerators, cars, laptops, ATMs, card POS machines, there is barely an hour spent without interacting with some kind of tech. This course aims to critically analyze this relationship of humans with design and technology; and also, of designers with technology. The course also tries to draw comparisons with the worldwide view of technology compared to how technology is perceived in Pakistan and the Subcontinent.

DES 204 - Research in Design

Credit Hours: 2-0

Prerequisites: CND - 101 Materials and Practices, and CND 102 - Ideation and Processes

This seminar course will complement the studio, providing students with both historical perspectives on the development of research in the field of Design, as well as introducing them to a range of qualitative methods. Design Research is the foundation on which many facets of contemporary design practice (both professional and academic) currently stand e.g., UX & interaction design, service design, systemic design, speculative design etc. This course serves as an introduction to the vast and evolving field of design research. This includes the various types of design research, its relationship with the practice of design, its contextual importance, and the various methods and techniques used to conduct such research and synthesize the findings.

DES 302 - Design & Social Change

Credit Hours: 2-0

Prerequisites: DES 204- Research in Design

This seminar will complement the studio, providing students with a range of perspectives, as well as frameworks and techniques, for transitioning societies through design, working up from the scale of the individual to large systems, while putting into context the necessity for societal transitions through engaging with critical challenges like climate change, globalization and development, and social empowerment and justice.

DES 303 - Design Fictions & Provocations

Credit Hours: 4

Prerequisites: DES 204 Research in Design, and DES 202 Design, Technology, and Society

This studio course will introduce students to using design practices in the service of producing provocations around technology and social and cultural change, as well as coming up with alternatives to present paradigms and envisioning different kinds of technological futures through design fictions. Students will be introduced to some of the theory and history of speculative and critical design practice, and to design fictions and futuring, and will, through several projects, learn to design things that provoke reflection, debate, and imagine otherwise.

DES 304 - Design Politics & Ethics

Credit Hours: 2-0
Prerequisites: DES 302 - Design & Social Change

This seminar course will complement the studio, giving students exposure to various discourses, frameworks and perspectives on issues of contemporary importance as they understand designed technologies as inherently political, and, therefore, necessitating ethical responsibility on the part of designers.

5.6.4. CND Electives

Different CND electives are offered each semester. Electives that have been offered by the CND in previous semesters include:

- ANT/LIT/COM 2XX – Palestine, Mon Amour: Anthropology after Gaza
- COM 10X -- Monoculture
- COM 114 - Art of Khatak
- COM 13X - Make it Up, Tell it True: Learning to Tell Stories
- COM 214 - Reading the Horror Film: Intro to Film Studies
- COM 251 – Introduction to Dance
- COM 320 - Introduction to Stardom and Fandom Studies
- COM 324 – Screenwriting Workshop (8-week intensive)
- COM 32X - Abject in the Post-Partition Urdu Literature and Poetry
- COM 422 – Kya Yeh Sach Hai?
- COM 436 – Advanced Cinematography
- COM/DES 22X – Super Mario Madness
- COM/DES 342 - Devised Theatre
- COM/LIT 32X – Understanding and Accessing the Liminal: Dreams, Madness, Memory and Beyond
- DES 216 - Illustrating Words
- DES 219 – Typography
- DES 22X – Introduction to Unreal Engine
- DES 310 - Illustrated Visions: Speculative Imagery from South Asia
- DES 31X – Advanced 3D Animation with Blender
- DES 31X – Awaam, Design aur Urdu
- LIT/COM 238/239 – Intellectual Life Writing

Comparative Humanities

BA (Honors) Comparative Humanities

6.1. Faculty

Faculty	Designation
Dr. Muhammad Haris	Program Director & Assistant Professor
Dr. Edward Moad	Professor
Dr. Marcia Hermansen	Professor, Lady Fatima Endowed Chair in Women and Divinity
Dr. Najeeb Jan	Associate Professor
Dr. Nauman Naqvi	Associate Professor
Dr. Noman Baig	Associate Professor
Dr. Peter Polak Springer	Associate Professor
Dr. Saeed Ur Rehman	Associate Professor
Dr. Nahrain Al-Mousawi	Assistant Professor
Dr. Sussane Kathrin Beiweis	Assistant Professor
Dr. Xiaoxi Zhang	Assistant Professor
Inamullah Nadeem	Associate Professor of Practice
Syed Afzal Ahmed	Associate Professor of Practice
Basharat Issa	Lecturer
Zahra Sabri	Lecturer
Zainab Saleem	Lecturer
Dr. Alexander Colin Kreger	Global Fellow
Dr. Gabriel Mathias Soares	Global Fellow
Dr. Vasfi Onur Ozen	Global Fellow
S Ali Mehdi Zaidi	Global Fellow Candidate
Hamza Bin Sajjad	Dean's Fellow
Raja Moeini	Dean's Fellow
Syeda Mehr Mustafa	Dean's Fellow
Sumbul Usman	Dean's Fellow

6.2. Program Description

Comparative Humanities (CH) offers students an exciting opportunity to study several disciplines in the humanities both critically and comparatively. Our areas of concentration include Philosophy, History, Literature, and Religious Studies. In teaching students to move fluidly across disciplines, we aim to cultivate not only breadth and depth, but an intellectual mindset attuned to the shared problems we face today as global citizens. CH will challenge students to reflect on a range of theories about human nature and society – drawing from diverse cultures, histories, and traditions – and in doing so heighten their sensitivity to the way our rapidly globalizing age of transnational capital has reshaped our understanding of concepts such as self, identity, obligation, community, and nation.

Students who pursue a CH major will learn to think both locally and globally, will learn to examine problems through a number of intellectual frameworks and traditions, and practice honing the skills of humanistic inquiry that continue to make the comparative humanities essential to the dynamic and multidimensional job markets of tomorrow. Learning to think comparatively within the humanities means learning to think flexibly and differently about the many problems we encounter in various professional domains.

It also means knowing how to use a critical framework to think through a difficult problem and, more crucially, knowing how to articulate and assess that problem in language that is at once cogent and graceful. A CH degree, therefore, clearly has both direct and indirect relevance to future pursuits in academia, media, journalism, management, government, law, and medicine, among the many other civic and international sectors in leadership where an insightful, perceptive, agile mind is an obvious mark of distinction.

Comparative Humanities (CH) aspires to train future intellectuals who know how to think flexibly across a number of disciplines, and thus how to work critically and creatively within an array of professional domains.

6.3. Program Learning Outcomes

Students who graduate with a degree in Comparative Humanities will be able to:

1. Work comparatively and critically across several disciplines and traditions.
2. Discuss the genealogy and development of major figures, periods and ideas in the disciplines of Philosophy, Literature, Religion, History and Music.
3. Synthesize multiple points of view in working with a series of thematically related texts, traditions, or disciplinary perspectives.
4. Apply a range of ethical, critical and theoretical frameworks to contemporary intellectual concerns.
5. Produce a theoretically informed close reading of a central work in dialogue with several other works and traditions.
6. Navigate databases and assess primary and secondary materials.

6.4. Requirements For the Major – Class of 2029

All students majoring in **Comparative Humanities (CH)** program are required to complete a total of minimum **37** courses **(125 credit hour)** requirements. The courses are divided in the following categories:

6.4.1. University Requirements

All students are required to take **ten** courses spanning seven forms of thought and action, called the Habib Liberal Core. Some courses in the major can also be counted towards meeting requirement of certain forms of thought in the core. For more details, please see the section on Habib Liberal Core in the catalog.

6.4.2. Comparative Humanities Program Core

The Comparative Humanities Core curriculum consists of **six** courses in a broadening and deepening sequence, and **two** other required courses that highlight the practical implications of an education in the humanities.

6.4.3. Primary and Secondary Concentrations

All CH majors will be required to have one primary concentration and one secondary concentration. The concentrations are designed to cultivate depth of knowledge, command of methodology, grasp of theory and analytical skills within specific disciplines within the humanities. The primary concentration will require **six (06)** courses and the secondary concentration will require **four (04)** courses. The four areas of concentration include:

Primary Concentrations			
History	Literature	Philosophy	Religious Studies

6.4.4. Capstone Project and Final Thesis

6.4.4.1. Capstone Project

All CH majors will be required to complete a capstone project. In most cases this will involve a significant revision of one of their best research papers.

6.4.4.2. Final Thesis

The final thesis is an alternative capstone option and is not a requirement for all students in the program. The Final Thesis is a requirement for students graduating with distinction requires students to have earned a minimum of A minus in HUM 402 – Capstone Research Seminar. Students who do not qualify for the final thesis may undertake the thesis with Program approval.

- Requires an additional Independent Study of 3 CH in the 8th semester, with the student's thesis advisor.
- Students pursuing a thesis option are to take an Independent Study of minimum 3 CH in lieu of a free elective.

6.4.5. Comparative Humanities Electives

CH students have to take two (02) additional electives from Comparative Humanities program as part of their degree.

6.4.6. Free Electives

CH students have to take six (06) free electives as part of their degree. Any course offered by the university counts as a free elective.

Students have the option to take 1 and 2 credit hour courses, with the understanding that they'll have to complete the total of 125 credit hours coursework (and a minimum of 37 courses)

minimally required for graduation. The "Free Electives" descriptor refers to a category of course, rather than a specific course.

Students can double count free electives in the grid towards completion of requirements for declared concentrations in HIST, LIT, PHIL, or RELS. This is applicable only for students pursuing beyond the minimally required one primary and one secondary concentration.

6.4.7. Natural Science Elective

CH students have to take one (01) natural science elective as part of their degree. Any course at any level offered by the Integrated Sciences and Mathematics program in the fields of Life Sciences, Chemistry, Physics, or Environmental Sciences

6.4.8. E-Portfolio

Comparative Humanities students will compile an e-portfolio as they progress throughout their eight semesters of study. The e-portfolio will appear on the students' academic transcript as a zero-credit hour requirement for graduation.

What constitutes the e-portfolio?

- Sample work from the 7-course core sequence.
- Draft of senior year thesis (for students writing the thesis).
- Upper division (300 and 400 level) work completed within the two concentration areas.
- Independently produced intellectual and creative work (encouraged, not required).
- Produced and curated as an online artefact on Habib University's CANVAS website. (After graduation, students will have autonomy over choice of platform for their e-portfolios, and how public or private they want their e-portfolio to be.)

Portfolios will be evaluated by a committee upon completion of the final semester of study. This is a process of qualitative assessment, where "exemplary" and "satisfactory" are markers indicating the quality of work. The committee will be appointed by the program at the start of the final semester of study, and students will be notified accordingly.

What are the criteria for qualitative assessment?

1. Completeness, in relation to the constituents listed above. (This would be a "satisfactory" e-portfolio, fulfilling the minimal requirement to graduate)
2. Is there an element of design in the production of the portfolio? (Element of design meaning creativity, imagination, and hard work, so that the e-portfolio is much more than a compilation of documents on a web portal)
3. Is there evidence of intellectual growth over the course of study? (a brief narrative account or infographic would suffice [but some textual evidence of revision in your capstone or thesis would be most welcome])
4. Does the portfolio present some evidence of critical self-reflection and rewriting? (a brief narrative account, drafts/revisions or infographic would suffice [other ways of fulfilling this requirement include but are not limited to: video essay or viva report from a faculty member])

Note: evaluation of 2, 3, and 4 combined will determine whether the portfolio merits the distinction of exemplarity, which is a requirement for graduating with honors.

6.5. Requirements Table for the Comparative Humanities Major (Class of 2029)

Course Category	Courses	Min. Courses	Credit Hours
University Requirements	Habib Liberal Core*	10	35
Comparative Humanities Core Sequence (08 courses)	HUM 101 Critical Inquiry and the Humanities	01	04
	HUM 200 World Historical Figures: Leadership, Judgment, and Authority	01	04
	HUM 201 Conceptual Genealogies	01	04
	HUM 300 Criticism, Dissent & the Ethics of Disagreement	01	04
	HUM 301 Comparative Hermeneutics I	01	04
	HUM 399 Fieldwork Practicum – Living Humanities	01	03
	HUM 401 Comparative Hermeneutics II	01	04
	HUM 402 Capstone Research Seminar	01	04[2]
Primary Concentration in the four areas[1]: Philosophy, Literature, History and Religious Studies (06 courses)	**Primary Concentration in Philosophy**		
	PHIL 200: What is Philosophy? or PHIL 122: Introduction to Western Philosophy	01	03
	PHIL Elective Any Level	03	09
	PHIL Upper-Level Elective	02	06
	Primary Concentration in Literature		
	LIT 104 What is World Literature? Introduction to the Study of World	01	03
	LIT 225: Introduction to Literary Theory and Criticism	01	03
	LIT Elective Any Level	02	06
	LIT Upper-Level Elective	02	06
	Primary Concentration in History		
	HIST 1xx/2xx Global Histories	01	03
	HIST 227 Understanding Histories: Historiography and Historical Methods	01	03
	HIST Elective Any Level	02	06
	HIST Upper-Level Elective	02	06
	Primary Concentration in Religious Studies		
	RELS 122 World Religions	01	03
	RELS 223 Comparative approaches, methods and key issues in the study of religion	01	03
	RELS Elective Any Level	02	06
	Upper-Level RELS Elective	02	06

Course Category	Courses	Min. Courses	Credit Hours
Secondary Concentration in 4 areas[1]: Philosophy, Literature, History and Religious Studies (04 courses)	**Secondary Concentration in Philosophy**		
	PHIL 200: What is Philosophy? or PHIL 122: Introduction to Western Philosophy	01	03
	PHIL Elective Any Level	02	06
	PHIL Upper-Level Elective	01	03
	Secondary Concentration in Literature		
	LIT 104 What is World Literature?	01	03
	LIT 225: Introduction to Literary Theory and Criticism	01	03
	LIT Elective Any Level	01	03
	LIT Upper-Level Elective	01	03
	Secondary Concentration in History		
	HIST 1xx/2xx Global Histories	01	03
	HIST 227 Understanding Histories: Historiography and Historical Methods	01	03
	HIST Elective Any Level	01	03
	HIST Upper-Level Elective	01	03
	Secondary Concentration in Religious Studies		
	RELS 122 World Religions	01	03
	RELS 223 Comparative approaches, methods and key issues in the study of religion	01	03
	RELS Elective Any Level	01	03
	RELS Upper-Level Elective	01	03
Other Requirements	Comparative Humanities Electives (any level)	02	06
	Free Electives	06	18
	Natural Science Elective[3]	01	03
	Overall	**37**	**125**

[1]Either a double concentration or one primary and one secondary concentration.

[2]Capstone research paper, written in HUM 402: Capstone Research Seminar, earning a passing grade (C minus) by the instructor/s.

[3]Natural Science (NS) elective is any course (at any level) offered by the Integrated Sciences and Mathematics program in the fields of Life Sciences, Chemistry, Physics, or Environmental Sciences. Students must complete one NS elective and one free elective across Semesters I and II. Students may choose which to take first, but must ensure that the NS elective is completed by the end of the first year.

Evaluation of capstone paper in HUM 402 will determine if it has the potential to develop into a thesis. A minus on the capstone paper is a minimally required qualification for students to pursue the possibility of writing a final thesis.

Note 1 - An E-Portfolio, compiled over 8 semesters of study, and evaluated as satisfactory by committee upon

Course Category	Courses	Min. Courses	Credit Hours
completion of capstone. Note 2 - Final thesis, which is a requirement for students graduating with distinction requires students to have earned a minimum of A minus in HUM 402 – Capstone Research Seminar. Students who don't qualify for the final thesis may undertake the thesis with Program approval. • Requires an additional Independent Study of 3 CH in the 8th semester, with the student's thesis advisor. • Students pursuing a thesis option are to take an IS of min 3 cr hrs in lieu of free elective 8 of 8.			

6.6. Course Descriptions

6.6.1. Required Comparative Humanities Core Courses

In CH program, there are a total of 7 program core courses that are listed below:

HUM 101 - Critical Inquiry and the Humanities

Credit Hours: 4
Prerequisites: None
Fulfills: CH Core

This is the First-Year team-taught introduction to both the four humanities disciplines taught at Habib University (History, Literature, Philosophy and Religious Studies) and an introduction to interdisciplinary conversation and approaches in the humanities. Students will learn the methods, aims and styles of inquiry practiced by our faculty. This facility for interdisciplinary inquiry is an important outcome for this major, and it yields the distinctive abilities in critical thinking for which the graduates of humanities programs have long been distinguished and valued. Through this introductory core course in Comparative Humanities, we also hope that our students will develop deeper appreciation for differing perspectives.

HUM 200 - World Historical Figures: Leadership, Judgment, and Authority

Credit Hours: 4
Prerequisites: None
Fulfills: CH Core

This CH core course explores leadership and the mechanisms of authority and power in world history. The purpose of this course is to delve into the mythical figures for the History of the modern world in order to understand their political projects, their ambitions, their triumphs, and their disappointments. Instead of approaching them as isolated figures, we will strive to understand the cultural, social, and political contexts in which they were inserted and how they helped shaping those contexts. The notions of leadership, judgment, and authority will be our guiding principles.

HUM 201 - Conceptual Genealogies

Credit Hours: 4
Prerequisites: None
Fulfills: CH Core

This second course in the CH core sequence involves engagement with the historical and cultural

formations of modernity across world traditions. Students will learn to think comparatively about cultures and traditions using the methods, aims and styles of inquiry practiced by our CH faculty. The central purpose of the course is to introduce students to genealogical investigations of concepts, which is a core skill in the Humanities disciplines.

HUM 301 - Comparative Hermeneutics I: Major Works and Traditions Seminar

Credit Hours: 4
Prerequisites: None
Fulfills: CH Core

This third-year seminar will continue work with major thinkers and traditions in dialogue, but take students deeper into more localized tensions within the field. The goal will be to examine an academic debate or problem of some sophistication within the discipline, or between several disciplines. Students will work with one or two key figures to help deepen their understanding of that debate, or attempt to initiate their own related line of inquiry based on close work with one or two central figures. Hermeneutics is the art and theory of interpretation. Just as interpretation and understanding are essential to human existence, hermeneutics is at the heart of the humanities, the forms of knowledge that impel us to reflect on, and thus intensify and empower our existence. Hermeneutics are strewn across (what we moderns call) the 'humanistic traditions' of the world, in all human civilizations and cultures, centrally in intense linguistic artifacts and productions, whether of oral or written character and transmission. Comparison of hermeneutic traditions within and across cultures further intensifies our powers of interpretation and understanding – indeed such comparison is essential to the operation and intensification of those powers, as is one of the key theoretical findings of modern hermeneutics.

HUM 300 - Criticism, Dissent and the Ethics of Disagreement

Credit Hours: 4
Prerequisites: None
Fulfills: CH Core

This is a course on social responsibility and the ethics of disagreement. In this course we will engage students in complex and contentious arguments in the humanities through the works of prominent public intellectuals with the goal of enhancing their capacities to participate forcefully, effectively and respectfully in civil discourse.

HUM 399 - Fieldwork Practicum - Living Humanities

Credit Hours: 3
Prerequisites: None
Fulfills: CH Core

HUM 399 is a theoretically guided fieldwork practicum course, structured around a thematic focus area developed by the course instructor. In any given iteration of HUM 399, the instructor will guide students in the process of defining and completing a project in the context of the focal theme area. The theoretical basis and theme will be situated within the milieu of Comparative Humanities, relating to the domains of history, literature, philosophy, religion, and music. As part of the core curriculum in Comparative Humanities, HUM 399 is also premised on the concept of comparative hermeneutics. However, HUM 399 is designed to study texts, concepts, and metaphors of the humanities from the standpoint of fieldwork experience. The field could be an institution or an independently chosen site of praxis, professional activity, or cultural production, that can be clearly defined as a "field". The course gives students exposure to work done on

cutting edge problems and challenges at the intersection of the ethnographic research in Anthropology/Social Sciences and the ideas, methods, and discourses of the humanities. In this sense, students take the exercise of comparative hermeneutics and forwarding analysis into a trans-disciplinary zone at the juxtaposition of metaphors, concepts, and figures of the humanities, on the one hand, and narratives generated through the ethnographic encounter and field work. By the end of the course, students are expected to produce a substantive essay having both written and audio-visual components, and which documents their capacity to carry out and apply humanistic inquiry in the terrain of materially embodied affect, experience, and living ideas. While the topic and field areas are going to vary depending on the instructor, an overarching meta-theme for the course is: fieldwork as a response to representational thinking in the humanities.

HUM 401 - Comparative Hermeneutics II: Major Works and Traditions Seminar

Credit Hours: 4
Prerequisites: None
Fulfills: CH Core

As the Senior Seminar in Comparative Humanities Core Curriculum this course serves as a preliminary (and pre-requisite) for the HUM 402: Capstone and Senior Thesis Seminar. As a deepening seminar, the course which will challenge students to define a compelling problem, project, or line of inquiry that requires extended critical analysis, interpretation and assessment. The application of critical frameworks, requires students to work with several texts and disciplines in conversation.

Examples of these Senior-level deepening seminars may include in-depth studies of Marx, Agamben, Poststructuralism, Gadamer, Feminism, the Anthropocene, Postcolonial theory, James Joyce, environmentalism, Sufism, etc., depending on faculty interest and availability. Students will be expected to focus on a central thinker, key work, major period, influential religious movement, school or doctrine for close examination.

HUM 402 - Capstone Research Seminar

Credit Hours: 4
Prerequisites: None
Fulfills: CH Core

The final course of the deepening sequence in the CH core sequence will be a workshop course for the Seniors working on their capstone projects or senior thesis. The Capstone Seminar is designed to offer students of Comparative Humanities who are entering their final year of undergraduate study, a series of thought-provoking readings, engagements and conversations around a broad yet significant area of inter- disciplinary enquiry. In part the aim of the seminar is to marshal the full weight of their critical capacities for understanding the complex and often perplexing problems of our time, and to self-reflexively evaluate both the epistemological and hermeneutic merits and limitations of their humanities training and education. Additionally, the seminar will push students to marshal and explicitly articulate the variety of tools (methodological and theoretical), concepts, and interdisciplinary and comparative frameworks that they have accumulated over the course of their undergraduate experience, and bring them to bear upon the particular thematic meditations of this semester.

6.6.2. Required Philosophy Concentration Courses

Any CH Major pursuing a Concentration in Philosophy is required to take either of the two core courses (mentioned below):

PHIL 200 - What is Philosophy?

Credit Hours: 3

Prerequisites: None

Taking a comparative approach to the subject matter, this course investigates the original writings of a range of contemporary philosophers, where they have problematised and responded to the "what is philosophy?" question. The writings under consideration help us grapple with differing frameworks and conceptual lenses for generating clarity on the fundamental question of philosophy, and the process, work, purpose, and history of philosophy. This course calls for consistent focus on careful reading, writing, research, presentation assignments, and intensive class participation commitment. The philosophers whose writings we consider this semester include: Noam Chomsky, Michel Foucault, Martha Nussbaum, Alain Badiou, Louis Althusser, Gilles Deleuze, Félix Guattari, Reza Negarestani, Jean Francois Lyotard, Jacques Derrida, Anne Dufourmantelle, and, Jaun Elia.

PHIL 122 - Introduction to Western Philosophy?

Credit Hours: 3

Prerequisites: None

This course aims to provide a systematic introduction to the main problems of metaphysics, epistemology, ethics and aesthetics, as addressed in the Western philosophical tradition. It familiarizes students with central debates in Western philosophy and permits them an overview of the works of some of the discipline's most pertinent thinkers. It does so by pointing out long-term traditions of Western philosophical thought as well as their implications for contemporary intellectual discourse. It engages with several important issues concerning the nature of knowledge, truth, self, reality, consciousness, morality, language, and God. Along with reading texts by classic figures such as Plato, Descartes, Hume, and Kant, students will also get to study modern and contemporary thinkers such as Simone de Beauvoir, Ludwig Wittgenstein, Edmund Husserl, Hannah Arendt, Martha Nussbaum, and Derrida. Students will learn to engage with various philosophical issues critically, to compare them analytically, and to translate what they mean for the present. In so doing, students will acquire the critical analytical vocabulary to understand our current socio-political predicament in a reflected and philosophically informed way.

6.6.3. Required Literature Concentration Courses

Any CH Major pursuing a Concentration in Literature is required to take two core courses (mentioned- below):

LIT 104 - What is World Literature: Introduction to the Study of World

Credit Hours: 3

Prerequisites: None

This course is an introduction to literary study that develops students' critical reading skills through the analysis of poetry, prose, drama, and/or film. Themes of the course will focus on the ways different individuals, societies, and cultures represent themselves in literature, and how we read and interpret those forms of representation through the application of basic critical literary

tools and theories.

LIT 225 - Introduction to Literary Theory & Criticism

Credit Hours: 3

Prerequisites: None

This course explores the major theories of reading and interpreting literature that developed throughout the twentieth century. Introduction to Literary Theory & Criticism attempts to answer a range of questions central to the nature of literary experience. It examines the production of value and meaning in works of art, grapples with the mediating power of history and culture in framing how we understand those works, and highlights the role of tropes and formal elements like imagery, metaphor, symbol, genre, and narrative in shaping how we experience texts aesthetically. Literary theory also explores questions of authorship and intertextuality, gender and agency, and language and representation. In reflecting on these questions, students will engage critically with some of the most influential theorists, schools of thought, and conceptual problems that have come to define literary studies in the past century, ranging from practical criticism to semiotics to poststructuralism. As a final project, students will undertake a theoretically informed "reading" of a text of their choice.

6.6.4. History Concentration Courses

Any CH Major pursuing a Concentration in History is required to take two core courses, one of which is offered under the basket of 'Global Histories'*.

HIST 2xx - Global Histories: Subalternity in South Asia

Credit Hours: 3

Prerequisites: None

Conventional ways of studying South Asian history mainly focus on high politics. The wider implications of colonial rule and the process of partition show up only sporadically in mainstream narratives, and there too, mostly in the context of mindless violence, for example, the Jalianwala Bagh incident or the bloodshed that accompanied 1947. This course will attempt to correct this skewed viewing of the past by bringing to the fore the histories of such groups as are usually overlooked. Through a careful study of those on the margins of social, political and economic life - the working class, labourers, peasants, scheduled castes, tribal groups, khwajasara's to name but a few - this course aims to acquaint students to a radically different perspective of the realities of colonial India.

HIST 227 - Understanding Histories: Historiography and Historical Methods

Credit Hours: 4

Prerequisites: None

The aim of this course is to develop the historiographical and analytical skills necessary for students to conduct advanced research in the historical field. It is intended for history majors and minors to make the jump from learning specific histories to thinking more broadly about studying the past. It introduces students to trends in modern historiography, which, while meaning the literal writing of history, is also used to refer to theories of history and the history of "history" as an academic field.

Sampling a range of texts, we will explore some fundamental components of historical thinking, including ideas about context and causation, methods of historical analysis, issues of truth and objectivity and conflicting interpretations within historical approaches and genres. Through

intensive reading, discussions and written essays, we will look into the methods and rich varieties of historical inquiry, the dynamic nature of scholarship and some of the recent shifts in the discipline.

The course asks students to think about a range of questions related to the discipline: What is history? How have historians approached the study of the past? How and why have there been changes in approaches to the study of history?

Note: Students must consult with the program regarding course offerings that fulfill the 'Global Histories' requirement.

6.6.5. Religious Studies Concentration

Any CH Major pursuing a Concentration in Religious Studies is required to take the two core courses mentioned below:

REL 122 - World Religions

Credit Hours: 3

Prerequisites: None

The course is designed to fulfill two critical objectives. The first objective is to develop a sound introductory level understanding of five great world religions (Buddhism, Christianity, Hinduism, Islam and Judaism). Collectively, these five religions account for 6.1 billion of the world's 7.79 billion people. Of the 1.69 billion people not covered by these five major world religions, 1.19 billion people are classified as "secular," "nonreligious" or "agnostic/atheist." It's important to emphasize the word "introduction" in the title of this course. It would be easy to spend a lifetime studying each of these religions, so no one course can do more than scratch the surface. It's also important to stress that no religion can be distilled down to some essential core, and one of the recurring themes of this course will be the tension between unifying aspects of the tradition and the tremendous diversity that exists within all religions. Similarly, religions don't exist in the abstract, they exist in the context of specific times and cultures, which both shape and are shaped by religion.

A second objective of this course is that it is also designed to introduce you to the scholarly humanistic study of religion. What does this mean? First, let's consider what the humanities are. They are an interrelated series of academic disciplines that explore what it means and has meant to be human across both time and geographical space. And, as we'll discuss in greater detail in a moment, from our earliest historical records of abstract human thought, religion seems to have been universally central to human expressions of meaning

REL 223 - Comparative approaches, methods and key issues in the study of religion

Credit Hours: 3

Prerequisites: None

The study of religion arguably represents one of the most stimulating field of research today in the humanities and social sciences. But what is "religion" and how are we to approach it academically? Totally in sync with the overall vision of the CH program, this course will evolve as a comparative and transdisciplinary approach to religious studies. This course will expose students to fundamental theoretical and methodological issues in the academic study of religion. It will also explore ways or lenses through which the study of religion could be approached by introducing students to classic works and authors (Durkheim, Weber, Freud, Marx, James, etc.), and also examining their legacy and continuing influence upon the field of religious studies. In addition to familiarizing students with a variety of approaches to understanding religion (as a

social phenomenon, an "experience," and a body of lived practices), the course gives attention to the construction of the category of "religion," ethical issues involved in the study of religion, and issues and topics (gender, secularism, pluralism, postcolonialism).

6.6.6. Comparative Humanities Elective Courses

The Comparative Humanities program offers a variety of elective courses each semester. Electives offered in the past include the following:

- HIST 332: History of Brazilian Independence
- LIT 310: Urdu and Global Voices: Translations of Modern Fiction and Poetry
- LIT 313: Postcolonial Literature of Migration and Exile
- MUS 101 Music of South Asia: Style & Structures
- MUS 111 Breathing Bansuri
- MUS 222 Sound and Subjectivity: Listening to the Other
- MUS 226 Thumri ki Kahani: Romance in Raag Form
- PHIL/COM 219 Tragic Philosophy and Film
- PHIL 221 Medieval Islamic Philosophy
- MATH/PHIL 222 Paradox and Infinity
- PHIL/SDP 222 What is Power? Foucault, Biopolitics & Critical Thinking
- PHIL 326: Philosophical Hermeneutics
- PHIL/RELS 327 Spirituality, Philosophy and Science
- RELS/ANT 100: Jamal: Islamic Aesthetics and Design
- RELS / ANT 252 Anthropology of Religion

DHANANI SCHOOL OF SCIENCE & ENGINEERING

Computer Science

BS in Computer Science

7.1. Faculty

Faculty	Designation
Dr. Syeda Saleha Raza	Program Director, Associate Professor
Dr. Abdul Samad	Associate Professor
Dr. Shah Jamal Alam	Associate Professor
Dr. Ayesha Enayat	Assistant Professor
Dr. Behroz Mirza	Assistant Professor
Dr. Bilal Wajid	Assistant Professor
Dr. Faisal Alvi	Assistant Professor
Dr. Muhammad Qasim Pasta	Assistant Professor
Dr. Muhammad Usman Arif	Assistant Professor
Dr. Syed Hammad Ahmed	Assistant Professor
Dr. Unaiza Ahsan	Assistant Professor
Maria Samad	Lecturer
Nadia Nasir	Lecturer
Anisa Aisha Ahmed	Dean's Fellow
Tauqeer Saleem	Dean's Fellow
Asad Tariq	Dean's Fellow

7.2. Vision

The program educates students in the theory systems, and applications of CS in order to enable them to make impactful contributions to the society and prepare them for success in industry, entrepreneurship and higher education.

7.3. Program Description

Computer Science (CS) is the study of computation - what can and cannot be computed, how can computation be made more efficient, how to build machines that can compute, and which spheres of human activity can benefit from computational approaches. It is deeply rooted in logic and mathematics. Theoretical Computer Scientists push the frontiers of computation by inventing new computational approaches. Practical Computer Scientists apply the theory of Computer Science to different application areas like science, finance, medicine, business, transportation, entertainment, education, communication, engineering, art, and the humanities.

Interventions stemming from CS are just beginning to disrupt and reinvent Pakistani society. The CS program provides students the intellectual and technical foundation to assess these interventions and to contribute meaningfully and thoughtfully to the transition of our society to the information age. With an education grounded in the Liberal Arts, our graduates have an unrivaled understanding of our society and the ethical ramifications of technology.

A major with the program educates students in the theory, systems, and applications of CS so that they are able and willing to make impactful contributions to society and are prepared for success in the industry, entrepreneurship, and higher education.

7.4. Program Educational Objectives

The Computer Science program at Habib University aims to produce competent computer scientists who possess the following qualities:

1. Technical Excellence: Our graduates will have a strong foundational knowledge of mathematics and computer science, along with accompanying skills both in breadth and depth. This will allow them to position themselves equally well in the Information Technology industry, as technology entrepreneurs, or in graduate programs in Computer Science or other technical and scientific fields.
2. Life-Long Learning: Our graduates will have a hands-on approach to self-learning and research, continually enriching their knowledge, skills, and technical know-how.
3. Ethical Action: Our graduates will contribute to society in an ethical manner, with an appreciation of the historical, social, and philosophical context.
4. Effective Communication: Our graduates will effectively communicate and collaborate with people from diverse backgrounds and in a variety of settings.

7.5. Program Learning Outcomes

Upon graduation, CS students will have the following abilities:

1. **Theoretical Computer Science**: recall and apply foundational principles of computer science.
2. **Application Development**: build software systems of varying complexity in light of fundamental computer science principles and any other constraints.
3. **Analysis and Design**: perform technical analysis and design using core computing and mathematical knowledge.
4. **Systems**: apply the knowledge of computing systems.
5. **Research and Exploration**: develop expertise in and contribute to a given sub-field of computing by drawing upon a strong foundation in the fundamentals of computer science and mathematics to solve real life problems.
6. **Problem Solving:** identify and analyze problems and propose effective computing-based solutions.
7. **Practical Exposure**: make effective use of current tools, technologies, and good industry practices.

8. **Responsible Citizenship:** conduct their computing practice in a manner that is ethical and socially responsible, and corresponds to their distinct sense of identity and service to the community.
9. **Self-Learning:** continuously adapt their skills to the changes taking place around them.
10. **Design Thinking:** apply design thinking principles to the design of a solution.
11. **Multi-Disciplinarity**: incorporate knowledge and input from multiple disciplines.
12. **Communication and Teamwork**: communicate and function effectively as a member or a leader of a variety of teams.

7.6. Requirements for the Major – Class of 2029

All Habib University students majoring in Computer Science (CS) must complete a minimum of 130 credits hours, with a minimum grade of **C+** in each CS Foundation and Kernel course in order to graduate with this degree. Students must also meet all other requirements set by Habib University and by the Dhanani School of Science and Engineering. Some of these may overlap. The courses are divided in the following categories:

7.6.1. University Requirements

All students are required to take 10 courses as university requirements of Habib Liberal Core. Some courses in the major can also be counted towards meeting requirement of certain forms of thought in the Habib Liberal Core (e.g., Quantitative Reasoning, Formal Reasoning and Creative Practice Forms of Though). For more details, please see the section on Habib Liberal Core in the catalog.

- **Formal Reasoning requirement**
  Courses offered as part of the CS Foundation may be counted towards Habib Liberal Core Formal Reasoning requirements.
- **Quantitative Reasoning requirement**
  MATH 310 Introduction to Probability and Statistics, a Mathematics requirement for CS students, also fulfills the Quantitative Reasoning requirement of the Habib Liberal Core.
- **Creative Practice requirement**
  The creative practice requirement may be fulfilled through the following courses (these courses will also count towards fulfilling CS Kernel requirements): CS 224 Object Oriented Programming, CS 353 Software Engineering, CS 355 Database Systems or CS 412 Algorithms: Design and Analysis

7.6.2. Natural Science and Mathematics Requirement

7.6.2.1. Required Mathematics Courses

Students are required to complete four (04) mathematics courses. These courses are offered by the Integrated Science and Mathematics program, and are described in the program's section.

7.6.2.2. Natural Science Electives

To ensure the scientific literacy of all our graduates, students pursuing a CS major are required to complete two (02) natural science courses, with at least one with a lab component.

7.6.3. Computer Science Foundation Courses

The CS Foundation courses prepare students coming out of high school to build a sound foundation of CS concepts. It comprises of three (03) required courses and students must obtain a minimum grade of C+ in each course.

7.6.4. Computer Science Kernel Courses

The CS Kernel covers concepts, skills, and techniques that are fundamental to the pursuit of most disciplines and practices within CS. It comprises of nine (09) required courses and students must obtain a minimum grade of C+ in each course.

7.6.5. Computer Science Electives

Students are required to complete at least five (05) courses that explore various disciplines and practices within CS. Students *must* enroll in the lab of every 4 credit CS Elective.

7.6.6. Program Requirements

All Computer Science students are required to complete the following in additional to their other CS requirements:

- CS 290 *Khidmat* (field practice)

  A Khidmat module is an additional CS requirement that is to be ideally taken in summer 2 or 3. Khidmat aims for students to engage in society and make meaningful contributions to it in a manner that utilizes their computer science skills. Students engage in fieldwork immersing themselves in an environment that exposes them to real life challenges/issues occurring in society and make a positive impact.
- PLAY 113 Design Your Habib Experience
- EE 172/CS 130 Digital Logic and Design
- Kaavish I (Final Year Capstone Project)
- Kaavish II (Final Year Capstone Project)

7.6.7. Professional Practice

Students must take one course fulfilling this requirement from the bucket of Economics, Entrepreneurship and Management courses.

7.6.8. Free Electives

Student must take a minimum of five (05) courses as free electives. Any course offered at Habib university can be attempted as a free elective.

7.7. Requirements Table for the Computer Science Major (Class of 2029)

Course Category	Courses	Min. No. of Courses	Min. Credit Hours
University Requirements	Habib Liberal Core*	10*	35[1]

Course Category	Courses	Min. No. of Courses	Min. Credit Hours
Natural Science and Mathematics Requirement (06* courses)	**Required Math Courses (4 Courses)[1]**		
	MATH 101 Calculus I	01	03
	MATH 102 Calculus II	01	03
	MATH 205 Linear Algebra	01	03
	MATH 310 Introduction to Probability and Statistics*	01*	03*
	Natural Science Electives (2 Courses)		
	Natural Science Electives	02	6+1
Computer Science Requirements (18* courses)	CS 290 *Khidmat* (field practice)	01	Non-credit
	EE 172/CS 130 Digital Logic and Design	01	3+1
	PLAY 113 Design Your Habib Experience	01	0+1
	CS Foundation (3 Courses)		
	CS 101 Algorithmic Problem Solving	01*	3+1[1]
	CS 102 Data Structures and Algorithms	01*	3+1*
	CS 113 Discrete Mathematics	01*	3*
	CS Kernel (9 Courses)[3]		
	CS 201 Data Structures II	01	3
	CS 212 Nature of Computation	01	3
	CS 224 Object Oriented Programming and Design Methodologies	01*	3+1*
	CS 232 Operating Systems	01	3+1
	CS 353 Software Engineering	01*	3[1]
	CS 355 Database Systems	01*	3+1*
	CS 412 Algorithms: Design and Analysis	01*	3*
	CS Systems Requirements±	01	3+1
	CS 351 Artificial Intelligence	01	3+1
	CS Electives (5 Courses)		
	Computer Science Electives	05	15
	Final Year Capstone Project (*Kaavish*) (2 Courses)		
	CS 491 Kaavish I	01	0+3
	CS 492 Kaavish II	01	0+3[2]
Other Requirements (5 courses)	Professional Practice Elective	01	3
	Free Electives	05~	15~[4]
Overall		36*	130*

Course Category	Courses	Min. No. of Courses	Min. Credit Hours
[1] Three courses double counted in Habib Liberal core as well as one each in Mathematics, CS Foundation and CS Kernel courses. [2] Khidmat is an additional CS requirement to be ideally taken in Summer Semester 2. Khidmat aims forstudents to engage in society and make meaningful contributions to it in a manner that utilizes their computer science skills. Students engage in fieldwork immersing themselves in an environment that exposes them to real life challenges/issues occurring in society and makes a positive impact. [3] Students must obtain a minimum grade of C+ in each CS Foundation and Kernel course. [4] The number of free electives attempted must be such that the total number of credit-hours is at least 130. Any course offered at the university, including CS electives, can be counted as a free elective. The quantity of the free electives shown above is for guidance only. Note 1 - For CS 101, the University's first semester policy applies to only those students attending it in theirfirst semester. Otherwise, the unified grade base applies. Note 2 - CS Foundation and Kernel courses must be cleared with an earned grade of C+ or higher unlesssome other grading scheme, e.g., first-semester policy, applies.			

7.8. Course Descriptions

7.8.1. Required Computer Science Courses

CS 101 - Algorithmic Problem Solving

Credit Hours: 3-1
Pre-requisite: None
Fulfills: CS Foundation, and Formal Reasoning (FR) FoT requirement under the Habib Liberal Core (HLC).

This course introduces computer programming as a means to solve problems; and covers the basic components of computer programming; topics include dry run, algorithm, variables, data types, iteration, conditionals, functions, file and console i/o, and recursion.

MATH 101 - Calculus I

Credit Hours: 3-0
Prerequisites: None
Fulfills: Mandatory Math requirement for all DSSE students

This course fulfills a foundational mathematics course requirement for the Electrical Engineering, Computer Engineering and Computer Science majors. It is also a mandatory requirement for all non-DSSE students wishing to pursue a Mathematics Minor. The course lays the foundations for students to think visually, symbolically and numerically on the two overarching concepts of Differentiation and Integration. The course seeks to pave the way for students to develop the necessary computational and analytical skills (both in context and abstract terms) required in higher mathematics courses. The mode of instruction mostly follows a collaborative model where students are required to work in groups to discuss key Calculus ideas (that might be familiar) to deepen their understanding.

PLAY 113 - Design Your Habib Experience

Credit Hours: 0-1
Prerequisite: None
Fulfills: Design requirement

This course will take you through the basics of Human-Centered Design: an approach to problem-solving that involves empathizing with people; defining problems; generating ideas; prototyping solutions; and testing to learn what works and what doesn't. The first twelve weeks of the course will take students through the design process, practically applying key methods and mindsets to tackle problems around us at Habib. For example, this could be redesigning the university food experience, or designing a new student governance model. In the last three weeks of the course, students will apply their skills and knowledge to a more personal challenge: designing their own Habib experience.

CS 102 - Data Structures and Algorithms

Credit Hours: 3-1
Pre-requisite: CS 101 – Algorithmic Problem Solving
Fulfills: CS Foundation

This course motivates the design of algorithms by exploring various algorithms for a single task such as linear search and binary search, bubble sort, insertion sort, selection sort, merge sort, and quick sort. It introduces techniques to reason about and compare algorithms: asymptotic analysis and notation; introduces frequently used data structures: list, tree, graph, stack, queue; discusses and analyzes basic operations on the data structures: infix, postfix, and prefix traversal, breadth-first and depth-first search, computation of graph properties.

CS/MATH 113 - Discrete Mathematics

Credit Hours: 3-0
Prerequisite: None
Fulfills: CS Foundation

Preparation in the mathematical tools required for the future study of computer science, especially theoretical computer science, with an emphasis on logic and proofs; topics include propositional and predicate logic; proof techniques including mathematical induction, set operations and proving set identities, functions and cardinality, strong and structural induction, sequences and summations, recurrence relations, graphs and their properties.

MATH 102 - Calculus II

Credit Hours: 3-0
Prerequisites: MATH 101 - Calculus I
Fulfills: Mandatory Math requirement for all DSSE students.

Calculus is a very important part of Applied Mathematics which in turn serves as an important tool in Science and Engineering. In Calculus I you studied the fundamental concepts of function and the 4 techniques of differentiation and integration. Calculus II builds upon the concepts of calculus learned in the previous course and extends them to other areas of Applied Mathematics such as multivariable functions and vectors.

CS 224/CE 272 - Object Oriented Programming and Design Methodologies

Credit Hours: 3-1
Prerequisite: CS 102 – Data Structures and Algorithms
Fulfills: CS Kernel

Introduces object-oriented and related memory concepts; motivates modern C++ as the language of choice; topics include pointers and structs, objects, heap allocation, data encapsulation, classes, namespaces, constructors and destructors, virtual functions and destructors, operator overloading and standard input/output, inheritance and polymorphism, and templates. It incorporates project-based learning of design methodologies using UML 2.0 and modern software development tools and version control systems.

CS 355/CE 373 - Database Systems

Credit Hours: 3-1
Prerequisite: CS 102 - Data Structures and Algorithms
Fulfills: CS Kernel

This course explores in detail the theoretical and practical aspects of Relational Database Management Systems (RDBMS) and builds an understanding of database modeling, relational algebra, structured query language (SQL), transaction management, and concurrency control. The course also covers topics involving database connectivity with front-end applications and discusses administrative aspects of database systems including database security, database management vs data warehousing vs data mining, and big data and its challenges. The modern database techniques are also part of the course, and it discusses MongoDB as one of the modern databases.

CS 130/EE 172/CE 222 - Digital Logic and Design

Credit Hours: 3-1
Prerequisites: None
Fulfills: This course meets program requirements for CS, EE, and CE Majors

Digital Electronics is at the very heart of the modern world. From smart phones to 'Big Data' to the electronics that control our everyday lives, digital electronics plays a central role. An understanding of the basics of digital logic design is an essential skill for every engineer irrespective of their field of interest.

CS 330/CE 321/EE 371 - Computer Architecture

Credit Hours: 3-1
Prerequisite: CS 130/EE 172/CE 222 – Digital Logic and Design
Fulfills: CS Kernel

The course is offered under the CS Systems Requirement category. It studies the architecture of RISC-V processor that enables general-purpose computing; develops hands-on expertise in developing complex logical components; topics include instruction set architecture, addressing modes, processor design and computer arithmetic, pipelining, memory systems, instruction cycle, processor implementation on FPGA using Verilog HDL.

CS 201 - Data Structures II

Credit Hours: 3-0
Prerequisite: CS 102 – Data Structures and Algorithms, and CS/MATH 113 – Discrete Mathematics, and CS 224/CE 272 - Object Oriented Programming and Design Methodologies
Fulfills: CS Kernel

Data Structures are at the heart of all efficient software. While transparent to the user, the choice of data structure plays a crucial role in the efficiency of software. In addition, the study and design of data structures pose an interesting intellectual challenge. This course aims to deliver proficiency in the use of commonly used data structures (such as arrays, stacks, queues, and Trees) and in reasoning about the trade-offs involved in the choice of a data structure. The course also introduces a few higher-level data structures (such as AVL Tree, Red-Black Tree, Heap, Trie, and Inverted Index) and imparts a deeper understanding of the covered data structures through the underlying theory and implementation.

MATH 310 - Probability and Statistics

Credit Hours: 3-0
Prerequisites: MATH 102 - Calculus II
Fulfills: This course meets program requirements, and Quantitative Reasoning (QR) FoT requirement under the Habib Liberal Core (HLC).

In the present world, we encounter situations where we must make decisions based on incomplete or imperfect information. The theory of probability helps provide a formal mechanism for understanding, quantifying, and dealing with uncertainty, which is ever present in our lives, pure science, or engineering applications. By uncertainty, we mean the condition when outcomes or future are not fully determined or can be captured by a deterministic function; they depend on many factors and perhaps just on pure chance. A lot of our present-day technologies will not be possible without an understanding of how to make decisions in the presence of uncertainty. These technologies include all forms of wireless communication, machine learning and artificial intelligences applications, speech processing systems, and so many more. Equipping yourself with tools to deal with uncertainty will help you with whatever you wish to pursue in life.

MATH 205 - Linear Algebra

Credit Hours: 3-0
Prerequisites: MATH 102 - Calculus II
Fulfills: Mandatory Math requirement for all DSSE students

This course aims to develop an appreciation of the basic concepts of linear algebra and their applications in geometry and differential equations. This will enable students to address relevant problems in the wider fields of computer science, engineering, and natural sciences. The course content will be delivered mainly through in-class lectures. Students are expected to attend these lectures and understand the course notes and book content relevant to the course. A key feature of the course is weekly surprise in-class quizzes. These are meant to motivate regular engagement with the course content by the students and will be instrumental in their performance on the same.

CS 232/CE 324 - Operating Systems

Credit Hours: 3-1
Prerequisite: CS 102 - Data Structure and Algorithms, and CS 330/CE 321/EE 371 - Computer Architecture (CS Systems Requirement)
Fulfills: CS Kernel

The student will be taught principles of modern operating systems. In particular, the course will cover details of concurrent processes, multi-threads, CPU scheduling, memory management, file system, storage subsystem, and input/output management. This will be accomplished by integrating theory and practice through coordinated lecture and lab hours.

CS 212 - Nature of Computation

Credit Hours: 3-0
Prerequisite: CS/MATH 113 – Discrete Mathematics
Fulfills: CS Kernel

Develops the foundations for theoretical computer science; provides opportunities to develop rigorous mathematical arguments; engages with classical ideas from theoretical computer science; topics include decidability, complexity, halting problem, reduction, P vs. NP, NP-completeness, deterministic and non- deterministic finite automata, Turing machines, languages, regular expressions, grammars, Cook-Levin theorem.

CS 353/CE 374 - Software Engineering

Credit Hours: 3-0
Prerequisite: CS 224/CE 272 – Object Oriented Programming and Design Methodologies, and CS 355/CE 373 – Database Systems
Fulfills: CS Kernel, and Creative Practice (CP) FoT requirement under the Habib Liberal Core (HLC).

The course introduces students to various software process models and activities performed in different phases of software development, particularly Agile methodologies like Scrum and Kanban. Through theory and hands-on projects, students grasp the software development lifecycle's complexities. A group project emphasizes Agile principles, focusing on iterative problem-solving, adaptability, and customer collaboration. Using industry tools, students' progress through phases from requirements to deployment. This experiential learning equips students with essential skills for modern software engineering, emphasizing agility and collaboration in meeting real-world project demands.

CS 412 - Algorithms: Design and Analysis

Credit Hours: 3-0
Prerequisite: CS 201 – Data Structures II, and MATH 310/EE 354/CE 361 – Probability and Statistics
Fulfills: CS Kernel

Develops the tools and techniques to design and analyze algorithms for correctness and efficiency; presents and analyzes individual algorithms as instances of classes of algorithms. The course explores algorithms that are useful, instructive, and beautiful. Topics include asymptotic notation; run-time bounds; recurrences and their solutions, including the master method; a lower bound on sorting; divide and conquer algorithms; directed acyclic graphs (DAGs) and their

applications, e.g., topological sorting, identifying connected components; the max-flow problem and its solutions, including the Ford-Fulkerson method, its relation to the min-cut problem; dynamic programming; matrix-chain multiplication; longest common subsequence

and its variants; shortest path in DAGs; string edit distance and related problems; greedy algorithms and an overview of randomized algorithms.

CS 351 – Artificial Intelligence

Credit Hours: 3-0
Prerequisites: CS 102 – Data Structures and Algorithms, and MATH 310/EE 354/CE 361 – Probability & Statistics
Fulfills: CS Kernel

Artificial Intelligence (AI) is the science and engineering of making machines intelligent. This course is an introductory AI course that broadly exposes students to different sub-fields of AI such as Search and Optimization, AI in gaming, Machine Learning, Logic Programming, Probabilistic Reasoning, and Natural language Processing. During the course, emphasis is placed on hands-on experience, and students are engaged with solving real-world problems using different AI tools and techniques. The course also explores the societal and ethical implications of AI advancements with the objective of promoting responsible adoption of the field.

CS 491 - Kaavish I

Credit Hours: 0-3
Prerequisite: CS 201 - Data Structures II, and CS 353/CE 373 – Software Engineering
Fulfills: CS Capstone

Self-directed final year project carried out under the supervision of a faculty member; emphasizes solving a real-world problem; integrates knowledge and skills accumulated over the entirety of the degree; first of a 2-part sequence.

CS 492 - Kaavish II

Credit Hours: 0-3
Prerequisite: CS 491 – Kaavish I
Fulfills: CS Capstone

Kaavish condenses students' 4 years with the CS program at Habib University into a single course in the form of a final year project. The aim of the course is to enable students to research, propose, solve, and present a practical and meaningful problem using the learned skills and concepts in an allocated time frame.

7.8.2. Professional Practices Category Courses:

The students are required to enroll in either one of the following courses falling under the Professional Practices category:

MGMT 304 - Fundamentals of Intellectual Property

Credit hours: 3-0
Prerequisites: None

This course will cover a range of basic concepts related to intellectual property and its

management and highlight some of these by discussions of real-word case (law) examples. Other than the subgeneric (of its own kind) systems, the course content can broadly be divided into four general categories of IP: i) Patents, ii) Copyrights, iii) Trademarks, and iv) Trade Secrets.

MGMT 320 - Principles of Management

Credit Hours: 3-0
Prerequisites: None

The course on Principles of Management for Tech Professionals introduces management as a discipline and process to tech professionals. This course includes evolution and scope of management, decision- making, planning, strategy, organizing, staffing, leading, control, change, and the importance of management in the global environment and ethical considerations of management decisions. Hence, the course provides a framework that will enhance a person's effectiveness in business.

321 - Engineering Project Management

Credit Hours: 3-0
Prerequisites: None

Through using textbooks, discussions, assignments, and real-world examples, engineering professionals will learn how to identify, define, plan, execute, monitor, control, and close projects. They will build project components, organize work efficiently, and effectively, and help them to control changes. The students will use tools to build schedules, allocate resources, and manage the cost of any project. This will help them get hands-on training in using project management tools for the smooth flow of various stages of the project which is the need of time and the most demanded skill by employers worldwide.

MGMT 322 - Operations Management

Credit Hours: 3-0
Prerequisites: None

It has become increasingly important for tech professionals to learn, manage, and control work, time, and resources more efficiently and effectively. This course provides the basics to teach tech professionals about the key concepts and tools employed to design, analyze, control, and improve business processes by the principles of Operations Management, the production of goods and services. Briefly, this course will prepare students to understand and apply the concepts such as bottleneck measurement, process improvement and synchronization, process measurement, service improvement, Six Sigma approaches, lean management, statistical quality control techniques, and decision trees. Moreover, with an increase in global competition, the survival of a firm in the market largely depends on how well it integrates its operations into its business model. Thus, all students and potential business managers need to acquire an understanding and appreciation of operations management. This will help them to acquire the skills demanded by employers all around the world. Therefore, this course will essentially help to inculcate skills to produce well-rounded tech professionals.

MGMT 323 - Supply Chain Management

Credit Hours: 3-0
Prerequisites: None

The course aims to provide an understanding of fundamental concepts of supply chain management. Allfunctional areas of supply chain management are explored in an integrated view of procurement, manufacturing and operations management, transportation and logistics, inventory and warehousing, demand planning, scheduling, network design, collaboration, and performance measurement. Topics may also cover supply chain financial metrics, strategy, and risk management for demand-driven value networks.

7.8.3. CS Elective Courses

Different CS electives are offered by the program each semester. Electives that have been offered in previous semesters include:

- CS/SDP 262 Introduction to Computational Social Sciences
- CS 316 Introduction to Deep Learning
- CS 324 Advanced Programming in Java
- CS 326 Mathematics for Machine Learning
- CS 340/MATH 321 Geometrical Modelling and Analysis
- CS 363 Networks, Games, and Collective Behavior
- CS 370 Web and Mobile Development
- CS 400 Computer Science Senior Seminar
- CS 432 GPU Accelerated Computing
- CS 440 Computer Graphics
- CS 451 Computational Intelligence
- CS 457 Data Science Techniques
- CS 4xx Applied Digital Image Processing

Electrical Engineering

BS in Electrical Engineering

8.1. Faculty

Faculty	Designation
Dr. Muhammad Farhan	Assistant Professor & Program Director
Dr. Aamir Hasan	Professor
Mohammad Shahid Shaikh	Professor
Shafayat Abrar	Professor
Abdul Basit Memon	Associate Professor
Ishtiyaq Ahmed Makda	Associate Professor
Naveed Razzaq Butt	Associate Professor
Hamood Ur Rehman	Assistant Professor
Tariq Mumtaz	Assistant Professor
Waseem Hassan	Assistant Professor
Syed Arsalan Jawed	Associate Professor of Practice
Areeba Aziz Rajput	Lecturer
Ahmed Ali	Dean's Fellow
Tabsheer Ali Askari	Dean's Fellow
Ummamah Shah	Dean's Fellow

8.2. Vision

Be an agent of positive change in society through excellence in locally contextualized and globally competitive liberal-arts and discipline-specific education and research, and imparting an understanding of contemporary issues and challenges facing the society.

8.3. Program Description

The BS Electrical Engineering degree is offered as part of the comprehensive Electrical and Computer Engineering (ECE) program, which offers a robust and multidisciplinary curriculum that includes strong theoretical fundamentals and practical problem-solving. Our program is recognized for shaping students to be the next leading electrical engineers. The uniqueness of

our engineering program hinges on sound and contextualized liberal arts exposure that provides the mold for a 'great engineer'.

The Electrical Engineering Program at Habib University is recognized and accredited by Pakistan Engineering Council.

The ECE program aims to offer electives in all possible sub-disciplines within Electrical Engineering, but there is a specific focus on the following areas. Students can concentrate their degree in one of these areas, by appropriately choosing electives in that area. The elective courses can be selected in consultation with their academic advisor.

Information Systems and Robotics

Information systems area forms a bridge between information processing systems and physical systems. It includes areas such as Control, Signal Processing, and Vision-based systems. Signal Processing focuses on analyzing, modifying, and synthesizing information. Control theory helps us understand systems with feedback signals, and essentially allows us to design means to control them and make them behave in the desired manner. Robotics is, in fact, an interdisciplinary area involving Electrical Engineering, Computer Engineering, Mechanical Engineering, and Computer Science. Robotic systems are increasingly being employed in all areas of life. With the ever-increasing utilization of robotic systems, the demand for properly trained engineers in robotics is also increasing.

Electronics and Embedded Systems

Electronic systems are ubiquitous in today's consumer, industrial, automotive, medical, commercial, and military devices. Even traditional mechanical systems today, such as automobiles, cannot function without electronics. This trend of 'electronification' of society in the form of smart homes, smart cities, smart grids, coupled with the availability of inexpensive but powerful embedded systems, opens up a huge valley of opportunities for well-trained electronic engineers and entrepreneurs.

Power and Energy Systems

The ready availability of electrical power at a reasonable price is essential for a country's economic development. To come out of the current energy crisis, Pakistan needs thoughtful electrical engineers with technical expertise in the area of energy systems (power generation, transmission, distribution, renewable energy, power electronics), and the contextual awareness to develop the best possible solution to our crisis.

Telecommunications & Networks

Cellular mobile phone networks, satellite and fiber-optics communication systems, and global positioning systems play a fundamental role in increasing the quality of life and improving the efficiency of the service sector. A well-knit telecommunications infrastructure is essential for the economic development of a country. In Pakistan, we are witnessing the introduction of 4G LTE and 5G cellular phone systems, the proliferation of data networks, and a shift towards electronically facilitated services by both the public and private sector. Telecommunications thrust is intended to sustain the positive growth in this industry by providing adequately trained technical managers, leaders, and entrepreneurs.

8.4. Program Educational Objectives

The Electrical Engineering program at Habib University aims to produce competent electrical engineers who:

1. Exhibit broad-based technical excellence in their engineering practice and in other professional dealings.
2. Are aware of the impact of their work on society and environment.
3. Are capable of leading through a pluralistic approach.
4. Engage in the lifelong process of independent and reflective learning.

8.5. Program Learning Outcomes

The Program Learning Outcomes (PLO) are designed to prepare graduates to attain the program educational objectives and subsume the PLOs of Pakistan Engineering Council (PEC) and Accreditation Board for Engineering and Technology (ABET).

The EE program at Habib University aims to produce electrical engineers who, at the time of graduation, have the following abilities:

1. **Engineering Knowledge**: an ability to apply knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems;
2. **Problem Analysis**: an ability to identify, formulate, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering;
3. **Design of Solutions**: an ability to design solutions for complex engineering problems and design systems, components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations;
4. **Investigation**: an ability to investigate complex engineering problems in a methodical way including literature survey, design and conduct of experiments, analysis and interpretation of experimental data, and synthesis of information to derive valid conclusions;
5. **Modern Tool Usage**: an ability to create, select and apply appropriate techniques, resources, and modern engineering tools, including prediction and modelling, to complex engineering activities with an understanding of the limitations;
6. **Contextual Awareness**: an ability to apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice and solution to complex engineering problems;
7. **Environment and Sustainability**: an ability to understand the impact of professional engineering solutions in societal and environmental contexts, and demonstrate knowledge of and need for sustainable development;
8. **Ethics**: ability to apply ethical principles and commit to professional ethics, responsibilities, and norms of engineering practice;
9. **Collaboration**: an ability to work effectively, as an individual or in a team, on multifaceted and/or multidisciplinary settings;

10. **Communication:** an ability to communicate effectively, orally as well as in writing, on complex engineering activities with the engineering community and with society at large;
11. **Project Management**: an ability to demonstrate management skills as a member and/or leader in a team, to manage projects in a multidisciplinary environment;
12. **Lifelong Learning**: an ability to recognize importance of, and pursue lifelong learning in the broader context of innovation and technological developments.

8.6. Requirements For the Electrical Engineering Major – Class of 2029

All students majoring in *Electrical Engineering* are required to complete 43 courses and a minimum of 134 credit hours of coursework, and achieve a minimum CGPA of 2.33. The courses are divided in the following categories:

8.6.1. University Requirements

All students are required to take 10 courses spanning seven forms of thought and action, called the Habib Liberal Core. Some courses in the major can also be counted towards meeting requirement of certain forms of thought in the core.

8.6.2. Engineering Sciences & Computing

These courses in Mathematics, Physics, other Natural Sciences, and Computer Science provide the foundations for future Electrical Engineering courses as well as expand multidisciplinary breadth of students. Some of these courses can be counted towards minors in Mathematics, Physics, or Computer Science.

8.6.3. Circuits & Electronics

All EE students have to take following five (05) courses from the Circuits & Electronics domain:

1. **Introduction to Electrical & Computer Engineering:** Provides an overview of Electrical & Computer Engineering field and its applications.
2. **Electric Circuits - I**: Covers fundamental principles and analysis of electrical circuits.
3. **Electric Circuits – II:** Builds upon the concepts from Electric Circuits - I and explores more complex circuits.
4. **Electric Circuits Lab**: Explores advanced topics in electrical circuits and their applications.
5. **Basic Electronics:** Introduces the foundational concepts of electronics and electronic circuits.

8.6.4. Design

All EE students have to take following five (05) courses from the Design domain:

1. **Design Your Habib Experience:** A course that encourages creative thinking and problem-solving for a personalized Habib learning journey.
2. **Engineering Workshop and Design:** Provides hands-on experience with engineering design processes and techniques.

3. **Engineering Design and Innovation:** Encourages innovative thinking and application of design principles to engineering projects.
4. **Capstone Design Project - I:** Involves students in real-world engineering projects to apply their skills and knowledge.
5. **Capstone Design Project - II:** Continuation of the Capstone Design Project, allowing students to complete and present their projects.

8.6.5. Digital Systems

All EE students are required to take following three (03) courses from the Digital Systems domain:

1. **Digital Logic and Design**: Introduces digital logic circuits and their design.
2. **Computer Architecture:** Explores the organization and design of computer systems.
3. **Microcontrollers and Interfacing:** Focuses on microcontroller-based systems and their integration with external devices.

8.6.6. Systems Theory

All EE students are required to take following three (03) courses from the Systems Theory domain:

1. **Signals & Systems:** Studies signals and their analysis, essential for understanding various engineering systems.
2. **Analog and Digital Communication:** Covers the principles of analog and digital communication systems.
3. **Principles of Feedback Control:** Introduces control theory and feedback control systems for engineering applications.

8.6.7. Power Systems

All EE students have to take following three (03) courses from the Power Systems domain:

1. **Electromagnetic Theory:** Provides the foundational understanding of electromagnetism and its applications.
2. **Electrical Machines:** Explores the operation and design of electrical machines, such as motors and generators.
3. **Power Generation, Transmission, and Distribution:** Covers the generation, transmission, and distribution of electrical power.

8.6.8. EE Electives

All EE students are required to take four (04) EE electives as part of their degree. Electives can be with or without labs. However, if the electives are offered with labs, then those labs would be mandatory for graduation. The student must take at least 2 (out of 4) electives with lab to complete the graduating requirements.

8.6.9. Interdisciplinary Engineering Elective

All EE students are required to take one (01) Interdisciplinary Engineering course of at least 3 credit-hours.

8.6.10. Professional Practice

All EE students are required to take two (02) Professional Practice courses totaling to at least 05 credit-hours

8.6.11. EE/CE/CS Elective

All EE students are required to take one (01) elective from either Electrical Engineering, Computer Engineering or Computer Science as part of their degree.

8.6.12. Internship

Internship is mandatory for graduation (6-8 weeks during third or fourth year)

8.7. Requirement Table for the Electrical Engineering Major (Class of 2029)

Course Category	Courses	Min. No. of Courses	Min. Credit Hours
University Requirements	Habib Liberal Core	10*	35[1]
Engineering Sciences & Computing	**Mathematics (05 Courses)**		
	MATH 101 Calculus I	01	3+0
	MATH 102 Calculus II	01	3+0
	MATH 202 Engineering Mathematics	01	3+0
	MATH 205 Linear Algebra	01	3+0
	EE 354 Introduction to Probability & Statistics	01	3+0[1]
	Computing (03 Courses)		
	CS 101 Algorithmic Problem Solving	01	3+1[1]
	CS 102 Data Structures and Algorithms	01	3+1
	CS 224 Object Oriented Programming and Design Methodologies	01	3+1
	Natural Science (01 Course)		
	Natural Science Elective	01	3+0
Program Requirements	**Circuits & Electronics (05 Courses)**		
	EE 100 Introduction to Electrical & Computer Engineering	01	0+2
	EE 112 Electric Circuits I	01	2+0
	EE 211 Basic Electronics	01	3+1
	EE 213 Electric Circuits II	01	3+0
	EE 213L Electric Circuits II Lab	01	0+1

Course Category	Courses	Min. No. of Courses	Min. Credit Hours
	Digital Systems (03 Courses)		
	EE 172 Digital Logic Design	01	3+1
	EE 371 Computer Architecture	01	3+0
	EE 376 Microcontrollers & Interfacing	01	0+1
	Systems Theory (03 Courses)		
	EE 252 Signals & Systems	01	3+1
	EE 322 Analog & Digital Communication	01	3+1
	EE 361 Feedback Control Systems	01	3+1
	Power Systems (03 Courses)		
	EE 241 Electromagnetic Theory	01	3+0
	EE 331 Electrical Machines	01	3+1
	EE 335 Power Generation, Transmission & Distribution	01	3+1
	Design (05 Courses)		
	PLAY 113 Design Your HU Experience	01	0+1
	ENGR 291 Engineering Workshop & Design	01	0+1
	EE 391 Engineering Design & Innovation	01	0+2[1]
	EE 491 Capstone Design Project I	01	0+3
	EE 492 Capstone Design Project II	01	0+3
Electives	Electrical Engineering Electives	04	12+2[2]
	Interdisciplinary Engineering Elective (IDEE)	01	3+0[3]
Other Requirements	EE/CE/CS Elective	01	3
	Professional Practice Electives	02	5[4]
Overall		**43**	**134***

[1] Three courses double counted in Habib Liberal core as well as two in Engineering Sciences & Mathematics, and one in Design. Additionally, one Philosophy elective of at least 3 credit-hours is to be taken.

[2] Electives can be with or without labs. However, if the electives are offered with labs, then those labs would be mandatory for graduation. The student must take at least 2 (out of 4) electives with lab to complete thegraduating requirements.

[3] One Interdisciplinary Engineering course of at least 3 credit-hours.

[4] Two Professional Practice courses totaling to at least 5 credit-hours.

Elective courses in any category are to be taken from the list approved by the ECE program.

Note - Students who have not successfully taken a Chemistry course at the A-levels / Intermediate level, are required to mandatorily take a remedial Chemistry course in their 1st semester.

8.8. Course Descriptions

8.8.1. Required Engineering Courses

EE/CE 100 - Introduction to Electrical & Computer Engineering

Credit Hours: 0-2
Corequisite: CS 101 – Algorithmic Problem Solving
Fulfills: Circuits and Electronics requirement for EE Majors, and ECE Minor foundation

Through a series of projects, this course aims to expose the students, having little or no prior exposure, to the fascinating world of electrical and computer engineering. The course will allow the students to gain an appreciation for the history and possible futures of various disciplines within electrical and computer engineering. Students will spend most of their time in the lab working on these projects with classroom instruction for support. The course will introduce basic electrical concepts including charge, voltage, current, energy, power, resistance, capacitance, inductance, and Kirchhoff's laws. Practical digital and analog electronic systems will also be introduced to illustrate advanced topics that are treated completely in subsequent electrical engineering courses.

EE/CE 112 - Electric Circuits-I

Credit Hours: 2-0
Prerequisites: None
Corequisites: EE/CE 100 – Introduction to Electrical & Computer Engineering
Fulfills: Circuits and Electronics requirement for EE Majors, and ECE Minor Foundation.

This course introduces basic DC and AC steady-state analysis for linear circuits. Topics discussed in this course include circuit elements, Ohm's law and Kirchhoff's laws, node and mesh analysis, energy storage elements, Thevenin and Norton theorems, Phasors and sinusoidal steady state analysis. Computer applications in circuit simulation and numerical solution is also discussed.

CS 101 – Algorithmic Problem Solving

Credit Hours: 3-1
Pre-requisite: None
Fulfills: Engineering Sciences and Computing requirement, and Formal Reasoning (FR) form of thought requirement under the Habib Liberal Core (HLC).

Motivates computer programming as a means to solve problems; introduces the basic components of problem solving: repetition, decision making, data storage and manipulation, input/output, modularity, top-down design; develops expertise in the corresponding constructs – variables, data types, iteration, conditionals, functions, file and console I/O, and recursion – in a high-level programming language.

MATH 101 - Calculus I

Credit Hours: 3-0
Prerequisite: None
Fulfills: Engineering Sciences & Computing requirement, and Mathematics Minor requirement.

The course covers important pre-requisite content related to functions, their behavior, and

multiple contexts for which they serve as an important modelling tool. This course fulfills a foundational mathematics course requirement for the Electrical Engineering, Computer Engineering and Computer Science majors. It is also a mandatory requirement for all non-DSSE students wishing to pursue a Mathematics Minor.

ENGR 291 - Engineering Workshop

Credit Hours: 0-1
Prerequisite: None
Fulfills: Design requirement for EE Majors, and ECE Minor Foundation

This course aims to introduce students to hands-on engineering skills, necessary for creating their own prototypes. Topics covered in this course include introduction to engineering design process, shop safety, engineering drawing, solid modeling (CAD), 3D printing, effective use of basic hand tools such as saws and files, machining (Lathe, Milling, Drill press), CNC machining, soldering techniques, and PCB design and printing. The course work emphasizes practical skills through lab activities and project. Students will be required to work with different materials including metal, wood, and plastic.

PLAY 113 - Design Your Habib Experience

Credit Hours: 0-1
Prerequisite: None
Fulfills: Design requirement for EE Majors.

This course will take you through the basics of Human-Centered Design: an approach to problem-solving that involves empathizing with people; defining problems; generating ideas; prototyping solutions; and testing to learn what works and what doesn't. The first twelve weeks of the course will take students through the design process, practically applying key methods and mindsets to tackle problems around us at Habib. For example, this could be redesigning the university food experience, or designing a new student governance model. In the last three weeks of the course, students will apply their skills and knowledge to a more personal challenge: designing their own Habib experience.

CS 102 - Data Structures and Algorithms

Credit Hours: 3-1
Prerequisite: CS 101 – Algorithmic Problem Solving
Fulfills: Engineering Sciences and Computing requirement.

Motivates the design of algorithms by exploring various algorithms for a single task: linear search and binary search, bubble sort, insertion sort, selection sort, merge sort, quick sort; introduces techniques to reason about and compare algorithms: asymptotic analysis and notation, Master theorem; introduces frequently used data structures: list, tree, graph, stack, queue; discusses and analyzes basic operations on the data structures: infix, postfix, and prefix traversal, breadth-first and depth-first search, computation of graph properties.

MATH 102 - Calculus II

Credit Hours: 3-0
Prerequisite: MATH 101 – Calculus I
Fulfills: Engineering Sciences and Computing requirement, and Mathematics Minor requirement.

Calculus is a very important part of Applied Mathematics which in turn serves as an important tool in Science and Engineering. In Calculus I you studied the fundamental concepts of function and the techniques of differentiation and integration. Calculus II builds upon the concepts of calculus learned in the previous course and extends them to other areas of Applied Mathematics such as multivariable functions and vectors.

EE 172/CE 222/CS 130 - Digital Logic and Design

Credit Hours: 3-1
Prerequisite: None
Fulfills: Digital Systems requirement for EE Majors, and ECE Minor Foundation.

Introduction to the design of digital hardware, realization of computation with logic gates; Boolean algebra, design of combinational logic circuits, and analysis and design of clocked sequential logic circuits, circuits for arithmetic operations; introduction to hardware description language and its application to logic design.

EE 213 - Electric Circuits-II

Credit Hours: 3-1
Prerequisite: CE/EE 112 – Electric Circuits I
Fulfills: Circuits and Electronics requirement, and ECE Minor Foundation.

This course is a continuation of EE 112, Electric Circuits-I. The course discusses transient analysis, sinusoidal steady state analysis of RC, RL and RLC circuits, and magnetically coupled circuits. The course also introduces the students to the s-domain analysis techniques and discusses the frequency response analysis for the circuits based on the s-domain analysis. Students will also be introduced to operational amplifiers and transformers.

MATH 202 - Engineering Mathematics

Credit Hours: 3-0
Prerequisite: MATH 102 – Calculus II
Fulfills: Engineering Sciences and Computing requirement.

Topics include: Vector Calculus (vector functions, line and surface integrals). Elementary methods for solving first order ODEs (direct integration and substitution) with geometric interpretation and classification, separable ODEs, method of integrating factors. Vector algebra (including matrix algebra, eigenvalues and eigenvectors, quadric surfaces). Dynamical systems (linear systems of ODEs, stability and phase portraits of dynamical systems). Second, order ODEs – elementary methods including their classification, reduction of order techniques, linear second order ODEs with constant coefficients, and finding particular solutions. Orthogonal functions and Fourier series solutions (generalized and trigonometric methods), convergence in the mean and pointwise convergence, odd and even expansions, half-range expansions. Partial differential equations (PDEs) (wave, heat and Laplace equations), solutions using Fourier series and Laplace transforms, and Schrodinger equation.

MATH 205 - Linear Algebra

Credit Hours: 3-0
Prerequisite: MATH 101 - Calculus I, and MATH 102 - Calculus II
Fulfills: Engineering Sciences and Computing requirement.

Topics covered: A brief revision of vector algebra including lines and planes in 3D and matrices, Determinants, Symmetric matrices, and quadratic forms; Elementary row and column operations of a matrix; Systems of linear equations and their solutions, existence, and uniqueness of solutions; Vector spaces; Inner products and ortho-normalization; Orthogonal transformations and rotations; Linear transformations, orthogonality, QR factorization, Hermitian and Unitary transformations; Least squares analysis and approximations; Singular value decomposition; Direct sum decomposition; and Caley- Hamilton Theorem.

EE 211 / CE 211 - Basic Electronics

Credit Hours: 3-1
Prerequisite: EE/CE 112 – Electric Circuits I
Fulfills: Circuits and Electronics requirement, and ECE Minor Foundation.

The course aims to introduce students to semiconductor devices, with emphasis on application of these devices in realizing analog and digital electronic circuits. The course starts with an introduction to semiconductors, energy bands, valence bonds, doping, n-type and p-type semi-conductors. The electronic devices, such as PN junction diode, bipolar junction transistor (BJT) and Metal-oxide semiconductor field- effect transistor (MOSFET), along with their applications are discussed in detail. Biasing circuits, single transistor amplifiers and their frequency are also discussed. Circuit simulations using PSpice (OrCAD) forms an important bridge between the theory discussed in class and lab experiments.

EE 354 / CE 361/MATH 310 - Introduction to Probability and Statistics

Credit Hours: 3-0
Prerequisite: MATH 102 – Calculus II
Fulfills: Engineering Sciences and Computing requirement for EE Majors, and Quantitative Reasoning (QR) form of thought requirement under the Habib Liberal Core (HLC).

Set theory and counting principles, axiomatic definition of probability, independence and conditional probability, Bayes' theorem; random variables (RVs) and their cumulative distribution function, probability mass functions, probability density functions and moments; joint RVs; limits theorems; statistics; applications.

EE 213L - Electric Circuits Lab

Credit Hours: 0-1
Prerequisites: EE 100 - Introduction to Electrical and Computer Engineering, and EE 213 - Electric Circuits-II
Fulfills: Circuits and Electronics requirement for EE Majors, and ECE Minor Foundation.

This lab introduces to students the fundamental concepts, principles and techniques to build physical models of the circuits and networks with a practical approach to test the understanding of how these circuits and networks operate. After completing the course students will be familiar with the computer-based simulation models such as PSpice and MATLAB to validate circuit models.

CS 224 - Object Oriented Programming

Credit Hours: 3-1
Prerequisite: CS 102 – Data Structures and Algorithms
Fulfills: Engineering Sciences and Computing requirement for EE Majors.

Introduces object oriented and related memory concepts; motivates C++ as the language of choice; topics include: pointers and structs, objects, heap allocation, data encapsulation, classes, namespaces, constructors and destructors, virtual functions and destructors, operator overloading and standard input/output, inheritance and polymorphism, templates, standard library containers, and software design using UML 2.0.

EE 241 - Electromagnetic Theory

Credit Hours: 3-0
Prerequisites: MATH 202 - Engineering Mathematics
Fulfills: Power Systems requirement for EE Majors.

The study of electrostatic and magneto-static fields in free and material spaces; solving boundary-value problems; extension of static fields to time-varying fields and electromagnetic waves; Maxwell's equations; propagation of electromagnetic waves through different types of media (unbounded media and guided structures) and their behavior at the interfaces.

EE 252 / CE 251 - Signals and Systems

Credit Hours: 3-1
Prerequisite: MATH 101 – Calculus I
Fulfills: Systems Theory requirement for EE Foundation, and ECE Minor Elective.

The topics covered in this course include types of signals; unit impulse and unit step functions; linear time invariant (LTI) systems and their properties; convolution sum and convolution integral; Fourier series, Fourier, Laplace and Z transforms; analysis and characterization of LTI systems using various transforms, Sampling.

EE 371/CE 321 - Computer Architecture

Credit Hours: 3-0
Prerequisite: EE 172/CE 222/CS 130 – Digital Logic and Design
Fulfills: Digital Systems requirement for EE Majors, and Computing Systems Design requirement for CE Majors.

Studies the architecture of processors that enable general purpose computing and develops hands-on expertise in developing complex logical components. Topics include instruction set architecture, addressing modes, processor design and computer arithmetic, pipelining, memory systems, fetch execution cycle, processor implementation on FPGA using Verilog HDL.

EE 376 / CE 331 - Microcontrollers and Interfacing

Credit Hours: 0-1
Prerequisites: EE 371 - Computer Architecture
Fulfills: Digital Systems requirement for EE Majors

Microcontrollers play a central role in modern life, controlling everything from the engine of a car, to domestic and office machinery. Microcontroller fundamentals including architecture, assembly language programming, and interfacing. Applications of industry-standard microcontrollers in

embedded systems. Employs software design tools, simulators, and hardware trainers. Will focus on interfacing the ARM RISC processor to motors, actuators and sensors.

EE 331 - Electrical Machines

Credit Hours: 3-1
Prerequisites: None
Fulfills: Power Systems requirement for EE Majors.

This is the first course on DC and AC electromechanical systems. Specific topics include single-phase and three-phase transformers, general structure and physical principles underlying electric drive systems, brushless, stepper and switched reluctance DC motors, DC generators, Induction and Synchronous AC motors and generators, torque-speed characteristics of motor drives. Mathematical modeling and speed control of electrical machines will also be discussed.

EE 361 - Principles of Feedback Control

Credit Hours: 3-1
Prerequisites: EE 252 - Signals and Systems
Fulfills: EE Core

Topics include: Models of dynamic systems, linear time-invariant (LTI) and transfer function models; impulse, step, transient and steady-state response; root locus technique, Bodé plots, Nyquist criterion; gain and phase margins, Nichols charts, lead, lag compensation; state-space techniques; simulation and controller design using MATLAB and Simulink.

EE 322 - Analog and Digital Communication

Credit Hours: 3-1
Prerequisites: EE 252/CE 251 - Signals and Systems
Fulfills: Systems Theory requirement for EE Majors.

Introduction to fundamental principles underlying the analysis, design and optimization of analog and digital communication systems; modulation techniques for analog and digital communication; effects of interference and noise and their suppression.

EE/CE 391 - Engineering Design and Innovation Lab

Credit Hours: 0-2
Prerequisites: CS 101 - Programming Fundamentals (Theory + Lab)
Fulfills: Design requirement for EE Majors, and Creative Practice (CP) form of thought requirement under the Habib Liberal Core (HLC)

This course aims to cultivate skills needed to produce great designs, be a more effective engineer, and communicate with high emotional and intellectual impact. This is accomplished by working on projects centered around a locally contextualized wicked problem and students are expected to develop a solution to their identified problem by the end of semester. During the course of the semester, students will study and apply techniques suited for various steps of the design process. Students will come to appreciate that a design problem involves multiple stakeholders, come to terms with the ambiguity that shows up in design problems, make decisions in presence of multiple conflicting objectives and constraints, handle uncertainty, think as part of a team, learn how to manage the progress of their project, and communicate their design effectively.

EE 335 - Power Generation, Transmission, and Distribution

Credit Hours: 3-1
Prerequisites: EE 213 – Electric Circuits II, and EE 213L – Electric Circuits Lab
Fulfills: Power Systems requirement for EE Majors, and ECE Minor Elective.

The development of electrical power systems has immensely contributed to the technological advances of the humankind over the past century. Electrical power provides clean and convenient energy to the modern society, which is necessary for the realization of the luxuries we are enjoying in this world today. In summary, the modern world and society does not exist without the availability of electricity. The purpose of this course is to provide the students with a complete flavor of the full-spectrum of electric power generation, transmission, and distribution systems.

EE/CE 491 - Capstone Project I

Credit Hours: 0-3
Prerequisite: ENGR 291 – Engineering Workshop, EE 376/CE 331 – Microcontrollers and Interfacing, and EE/CE 391 – Engineering Design and Innovation Lab.
Fulfills: Design requirement for EE Majors.

By the senior year, students have acquired sufficient breadth in Electrical Engineering (EE) and are on their way to acquire depth in one or more areas of specialization through technical electives. Intellectual maturity also requires that students understand their education in the broader context of the world and are prepared to make committed choices as participants of this complex world. The capstone design project, offered as a two semesters sequence, provides students with an opportunity to reflect on their entire educational experience, integrate the knowledge and skills acquired in earlier years, form connections within and across disciplines, and synthesize a solution to a problem connecting them to the broader issues of their discipline as well as the world they're about to enter.

EE/CE 492 - Capstone Project II

Credit Hours: 0-3
Prerequisite: EE/CE 491 – Capstone Project I
Fulfills: Design requirement for EE Majors.

This year-long sequence represents the culmination of study towards the BS degree. Students work individually or in small teams on a project in which they utilize the knowledge acquired during the first three years of education. Each project is closely supervised by a faculty member and each team produces a comprehensive report at the end of the project.

8.8.2. Professional Practice:

The students are required to enroll two of the following courses falling under the Professional Practices category:

MGMT 301 - Technology Management and Entrepreneurship

Credit Hours: 2-0

Topics include: managing technological transitions, intellectual property, creating and managing an innovative organization, managing research and development, organizational learning, economist and sociologist views of entrepreneurship, the process and management of entrepreneurship, the importance of innovation, teamwork, financial and marketing aspects, product quality; study will be supplemented with case studies.

MGMT 304 - Fundamentals of Intellectual Property

Credit Hours: 3-0

A primary purpose of this course is to raise awareness of Intellectual Property (IP) amongst students and to introduce the topic of IP, associated law, and some of its primary branches, to a non-legal (e.g. STEM, social sciences, design, liberal arts) audience so that they may effectively navigate through the landscape of various intellectual property regimes and related family of (legal) rights (IPR). Whilst these rights are rooted in law, intellectual property education has branches which touch many areas of academic research and commercial activity, including: economics, finance, taxation, human rights, ethics, education, governance and management. Studying intellectual property in a non-law curriculum can be seen as an 'opportunity' to engage with a vital topic that links commercial, legal and technical disciplines. Another important purpose

of this course is to introduce students to the increasingly important area of IP management (and IP strategy). IP and intangible assets are driven by investments in R&D, advertising and marketing, education and training, management information systems, organizational structure, and so on. The development of such assets can involve invention or some other creative step, as well as innovation. The investments and the activities involved are all inherently risky. Thus, understanding the management of IP and intangible assets requires inputs from a variety of disciplines, including economics, law, accounting and finance, management, and so on. An exposure to some key tactics on the strategic management of IP supplemented with relevant IP management case studies can be of immense value in todays and tomorrow's expanding ecosystem.

MGMT 320 - Principles of Management

Credit Hours: 3-0

The course on Principles of Management for Tech Professionals introduces management as a discipline and process to tech professionals. This course includes evolution and scope of management, decision- making, planning, strategy, organizing, staffing, leading, control, change, and the importance of management in the global environment and ethical considerations of management decisions. Hence, the course provides a framework that will enhance a person's effectiveness in the business.

MGMT 321 - Engineering Project Management

Credit Hours: 3-0

Through using textbook, discussions, assignments and real-world examples, the engineering professionals will learn how to identify, define, plan, execute, monitor, control, and close projects. They will build project components, organize work efficiently, effectively and help them to control changes. The students will use tools to build works schedules, allocate resources and manage cost of any project. This will help them to get a hands-on training of using project management tools for the smooth flow of various stages of project that is the need of time and most demanded skill by the employers all around the world.

MGMT 322 - Operations Management

Credit Hours: 3-0

The course aims to provide an understanding to identify, define, plan, execute, monitor, control, optimize and improve operations and processes in both manufacturing and service industries. For many different types of operations either in the tangible goods industry or the intangible service industry, this course aims to familiarize students with the major operational issues that challenge

entrepreneurs and managers and provide them with the basic language, concepts, insights, and analytical tools to deal with these issues.

MGMT 323 - Supply Chain Management

Credit Hours: 3-0

The course aims to provide an understanding of fundamental concepts of supply chain management. All functional areas of supply chain management are explored in an integrated view of procurement, manufacturing and operations management, transportation and logistics, inventory and warehousing, demand planning, scheduling, network design, collaboration, and performance measurement. Topics may also cover supply chain financial metrics, strategy, and risk management for demand-driven value networks.

ECON 302 - Engineering Economics

Credit Hours: 3-0

Topics include: Application of economic principles to engineering solutions, time value of money, cashflow analysis, quantization of profitability, methods of evaluating investments, comparison of alternative investments, inflation, depreciation, resource depletion, economic analysis of projects, economicmanagement of engineering projects.

8.8.3. Electrical Engineering Electives

Different electives are offered by the program each semester. Electives that have been offered in previous semesters include:

- EE 365 Industrial Instrumentation & Measurements
- EE 366/CE 366 Introduction to Robotics
- EE 422 Wireless and Mobile Communication
- EE 424/CE 341 Data Communication & Networking
- EE 427 Cellular Internet of Things in 5G
- EE 432 Power Electronics
- EE 433 Power Electronics – System Design
- EE 451 Digital Image Processing
- EE 452 Computer Vision
- EE/CE 453/352 Digital Signal Processing
- EE 468 Mobile Robotics
- EE 441 Antennas and Wave Propagation
- ENVS 301 Introduction to Environmental Engineering
- ME 291 Computer Aided Engineering
- ME 302 Engineering Thermodynamics

Computer Engineering

BS in Computer Engineering

9.1. Faculty

Faculty	Designation
Dr. Muhammad Farhan	Assistant Professor and Program Director
Dr. Ahmad Usman	Associate Professor
Dr. Farhan Khan	Assistant Professor
Dr. Muhammad Umer Tariq	Assistant Professor
Dr. Tariq Kamal	Assistant Professor
Dr. Munzir Zafar	Assistant Professor
Mr. Saad Umer Baig	Lecturer

9.2. Vision

Be an agent of positive change in society through excellence in locally contextualized and globally competitive liberal-arts and discipline-specific education and research, and imparting an understanding of contemporary issues and challenges facing the society.

9.3. Program Description

The BS Computer Engineering degree is offered as part of the comprehensive Electrical and Computer Engineering (ECE) program, offering a robust and multidisciplinary curriculum that includes strong theoretical fundamentals and practical problem-solving. Today, electrical and computer engineering intersect from miniaturized integrated electronics to large-scale power plants. As a student, you will be exposed to a diverse set of exciting sub-disciplines such as:

- Artificial intelligence
- Biomedical devices
- Communications
- Computer architecture
- Control systems
- Digital and analog electronics
- Instrumentation
- Machine vision
- Networking
- Robotics
- Software development
- Wireless devices

The program is recognized for shaping students to be the next leading computer engineers to integrate in the creative world of evolving technological landscape.

The ECE program aims to offer electives in all possible areas of Computer Engineering. The following descriptions will provide information about the broader threads considered in the Computer Engineering curriculum. Students can choose to concentrate on one or more of these threads by appropriately choosing electives in these areas. These elective courses can be selected in consultation with their academic advisor.

Computing Systems Design

Invention of transistor and possibility of very large-scale integration (VLSI) has opened gateways for solving computing limitations of the world. Today, the smartphone in your pocket has more computing power than fastest supercomputers from 80s, and is smaller in size and less power hungry. This concentration aims to train students to design computing systems that are efficient in terms of speed, area, throughput, power and energy. Students work on various levels of design, including (but not limited to) devices, integrated circuit (IC) design, digital system design, computer architecture design, and high-performance computing. Perhaps, you'll be the person to design the next generation of Intel, AMD, or Apple computing chip.

Embedded Systems Design

In the form of desktop computers, laptops, tablets, and smart phones, most people are familiar with computers that process information for human consumption. However, the vast majority of computers in use, today, are much less visible. They run the engine, brakes, and airbags in a modern car; they let you control your household appliances, microwave, TV, etc.; they control robots on a factory floor, generators in a power plant, medical devices in a hospital, and traffic lights in a city. These less visible computers are called Embedded Systems. Compared to the general-purpose computing systems, the principal difference in designing and analyzing embedded systems stems from their interaction with physical processes in addition to human operators. Our Computer Engineering Program takes a systematic approach to embedded systems education through its focus on state-of-the-art modeling, design, implementation, and analysis tools for embedded systems.

Software and Systems Engineering

The modern world is full of complex engineered systems that involve many component subsystems working in unison to deliver a useful service to consumers. These systems help us keep in touch with our friends and family, navigate the traffic of our city, access essential services such as electricity. With every passing day, computers and software are playing an increasingly import role in the successful implementation and operation of these complex engineered systems. When such systems fail, people get annoyed in the best case or seriously hurt and injured in the worst case. The fields of software engineering and systems engineering help us manage the complexity of these software-centric complex systems by providing a systematic approach to development and operation of these systems in a cost-effective and robust manner. Computer Engineering Program at Habib University incorporates software and systems engineering education to ensure that its graduates are equipped to lead the development and operation of the complex engineered systems of the modern world.

Networks and Security

It is estimated that by 2025, we'll have an average of 9.27 connected devices per person in the world. This exponential increase in the number of connected devices has created new and interesting challenges for networks, including dealing with heterogeneous devices (varied availability of power and correspondingly varied computing capabilities of devices) over the network, especially in the Internet of Things (IoT); the increasing need for network security; the

increasing demand for faster and reliable data transfer especially with inclusion of real-time devices such as tele-operated surgical robots on the network. The development of new standards as 5G and successful instances of network functions virtualizations are paving the way for addressing these challenges and creating a more seamlessly connected world. The Computer Engineering program at Habib University focuses on exposing you to foundational principles and networking, and current trends in networks and security.

Signal and Information Processing

Signal and Information Processing models and analyzes data representations of physical events. Signal and Information processing is at the heart of our modern world, powering today's entertainment and tomorrow's technology. You'll find it in your phones in form of compression when storing your audio and videos, when applying filters on your images or audio, or running analytics on those audio and video signals; in hospitals imaging our bodies; in autonomous vehicles making sense of environment so that vehicle can make safe decision; or behind technology used for speech recognition, detecting fraud, or stock market analysis in the form of Machine Learning algorithms. Signal and Information processing is the science behind our digital lives and this concentration will enable you to perhaps develop the next technology that enriches our everyday lives.

9.4. Program Educational Objectives

The Computer Engineering program at Habib University aims to produce competent electrical engineers who;

1. Exhibit broad-based technical excellence in their engineering practice and in other professional dealings.
2. Are aware of the impact of their work on society and environment.
3. Are capable of leading through a pluralistic approach.
4. Engage in the lifelong process of independent and reflective learning.

9.5. Program Learning Outcomes

Following Program Learning Outcomes (PLO) are designed to prepare graduates to attain the program educational objectives and subsume the PLOs of Pakistan Engineering Council (PEC) and Accreditation Board for Engineering and Technology (ABET).

Computer engineering program at Habib University aims to produce engineers who, at the time of graduation, have

1. **Engineering Knowledge**: an ability to apply knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems;
2. **Problem Analysis**: an ability to identify, formulate, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering;
3. **Design of Solutions:** an ability to design solutions for complex engineering problems and design systems, components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations;

4. **Investigation**: an ability to investigate complex engineering problems in a methodical way including literature survey, design and conduct of experiments, analysis and interpretation of experimental data, and synthesis of information to derive valid conclusions;
5. **Modern Tool Usage**: an ability to create, select and apply appropriate techniques, resources, and modern engineering tools, including prediction and modelling, to complex engineering activities with an understanding of the limitations;
6. **Contextual Awareness:** an ability to apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice and solution to complex engineering problems;
7. **Environment and Sustainability**: an ability to understand the impact of professional engineering solutions in societal and environmental contexts, and demonstrate knowledge of and need for sustainable development;
8. **Ethics**: ability to apply ethical principles and commit to professional ethics, responsibilities, and norms of engineering practice;
9. **Collaboration**: an ability to work effectively, as an individual or in a team, on multifaceted and/or multidisciplinary settings;
10. **Communication**: an ability to communicate effectively, orally as well as in writing, on complex engineering activities with the engineering community and with society at large;
11. **Project Management**: an ability to demonstrate management skills as a member and/or leader in a team, to manage projects in a multidisciplinary environment;
12. **Lifelong Learning**: an ability to recognize importance of, and pursue lifelong learning in the broader context of innovation and technological developments.

9.6. Requirements for the Computer Engineering Major – Class of 2029

All students majoring in *Computer Engineering* are required to complete a minimum of 43 courses and a minimum of 135 credit hours of coursework, and achieve a minimum CGPA of 2.33. The courses are divided in the following categories:

9.6.1. University Requirements

All students are required to complete ten (10) courses spanning seven forms of thought and action, called the Habib Liberal Core. Some courses in the major can also be counted towards meeting requirement of certain forms of thought in the core.

9.6.2. Engineering Sciences & Computing Requirement

The course courses in Mathematics, and other Natural Sciences, provide the foundations for future Computer Engineering courses as well as expand multidisciplinary breadth of students. Some of these courses can be counted towards minors in Mathematics, or Physics. All CE students must take these courses to fulfill this requirement:

- MATH 101 Calculus I
- MATH 102 Calculus II

- MATH 205 Linear Algebra
- CE 361 Introduction to Probability & Statistics
- CE 362 Statistics & Inferencing
- One Natural Science Elective

9.6.3. Design

All CE students have to take following five (05) courses from the Design domain:

- **Design Your Habib Experience:** A course that encourages creative thinking and problem-solving for a personalized Habib learning journey.
- **Engineering Workshop and Design:** Provides hands-on experience with engineering design processes and techniques.
- **Engineering Design and Innovation:** Encourages innovative thinking and application of design principles to engineering projects.
- **Capstone Design Project - I:** Involves students in real-world engineering projects to apply their skills and knowledge.
- **Capstone Design Project - II:** Continuation of the Capstone Design Project, allowing students to complete and present their projects.

9.6.4. Computer Engineering Foundation

All CE students must take these courses to fulfill CE Foundation requirement:

- CE 100 Introduction to Electrical & Computer Engineering
- CS 101 Algorithmic Problem Solving
- CE 112 Electric Circuits I
- CS 113 Discrete Mathematics

9.6.5. Algorithms & Software

All CE students must take these courses to fulfill Algorithms & Software requirement:

- CE 171 Data Structures and Algorithms
- CE 272 Object Oriented Programming and Design Methodologies
- CS 373 Databases
- CE 374 Software Engineering

9.6.6. Computing System Design

All CE students must take these courses to fulfill Computing System Design requirement:

- CE 222 Digital Logic Design
- CE 324 Operating Systems
- CE 321 Computer Architecture
- CE 332 Microcontrollers & Interfacing
- CE 325 Digital Systems Design

9.6.7. Electronics

All CE students must take CE 211 Basic Electronics to fulfill this requirement.

9.6.8. Information Systems

All CE students must take these courses to fulfill Information Systems requirement:

- CE 251 Signals & Systems
- CE 352 Digital Signal Processing

9.6.9. Networking & Security

All CE students must take CE 341 Data Communication & Networking to fulfill this requirement.

9.6.10. CE Electives

CE students need to take four (04) CE electives as part of their degree. Electives can be with or without labs – if the electives are offered with labs, then those labs would be mandatory.

9.6.11. Multidisciplinary Engineering Elective

All CE students must take two Multidisciplinary Engineering electives of at least 3 credit-hours each.

9.6.12. Professional Practice

All CE students must take two Professional Practice courses totaling to at least 5 credit-hours.

9.6.13. Internship

Internship is mandatory for graduation (6-8 weeks) during third or fourth year.

9.7. Requirements Table for the Computer Engineering Major (Class of 2029)

Course Category	Courses	Min. No. of Courses	Min. Credit Hours
University Requirements	Habib Liberal Core	10	35[1]
Engineering Sciences & Mathematics	MATH 101 Calculus I	01	3+0
	MATH 102 Calculus II	01	3+0
	MATH 205 Linear Algebra	01	3+0
	CE 361 Introduction to Probability & Statistics	01*	3+0[1]
	CE 362 Statistics & Inferencing	01	3+0
	Natural Science Elective	01	3+0[3]
Algorithms & Software	CE 171 Data Structures and Algorithms	01	3+1
	CE 272 Object Oriented Programming	01	3+1
	CS 373 Databases	01	3+1
	CE 374 Software Engineering	01	3+0
Program Requirements	**Computer Engineering Foundation**		
	CE 100 Introduction to Electrical & Computer Engineering	01	0+2
	CS 101 Algorithmic Problem Solving	01*	3+1[1]
	CE 112 Electric Circuits I	01	2+0
	CS 113 Discrete Mathematics	01	3
	Computing Systems Design		
	CE 222 Digital Logic and Design	01	3+1
	CE 324 Operating Systems	01	3+1
	CE 321 Computer Architecture	01	3+1
	CE 331 Microcontrollers & Interfacing	01	0+1
	CE 325 Digital Systems Design	01	3+0
	Electronics		
	CE 211 Basic Electronics	01	3+1
	Information Systems		
	CE 251 Signals & Systems	01	3+1
	CE 352 Digital Signal Processing	01	3+1

Course Category	Courses	Min. No. of Courses	Min. Credit Hours
	Networking & Security		
	CE 341 Data Communication & Networking	01	3+1
	Design		
	PLAY 113 Design Your HU Experience	01	0+1
	ENGR 291 Engineering Workshop & Design	01	0+1
	EE 391 Engineering Design & Innovation	01*	0+2[1]
	CE 491 Capstone Design Project I	01	0+3
	CE 492 Capstone Design Project II	01	0+3
Engineering Electives	Computer Engineering Electives	04	12[2]
	Multidisciplinary Engineering Electives	02	6+0[5]
Professional Practice	Professional Practice Electives	02	5+0[4]
Overall		**43**	**135**

[1] Three courses double counted in Habib Liberal core as well as one each in CE Foundation, Engineering Sciences & Mathematics, and Design. Additionally, one Philosophy elective of at least 3 credit-hours is to be taken.

[2] Electives of 3 or 4 credit hours each are to be taken with or without labs. However, if the electives are offered with labs, then those labs would be mandatory for graduation.

[3] One Natural Science elective course of at least 3 credit-hours.

[4] Two Professional Practice courses totaling to at least 5 credit-hours.

[5] Two Multidisciplinary Engineering electives of at least 3 credit-hours each.

Elective courses in any category are to be taken from the list approved by the ECE program.

Note - Students who have not successfully taken a Chemistry course at the A-levels/Intermediate level, are required to mandatorily take a remedial Chemistry course in their 1st semester.

9.8. Course Descriptions

9.8.1. Required Courses

CE/EE 100 - Introduction to Electrical & Computer Engineering

Credit Hours: 0-2
Prerequisites: None
Fulfills: CE foundation, EE foundation, and ECE Minor foundation

Through a series of projects, this course aims to expose the students, having little or no prior exposure, to the fascinating world of electrical and computer engineering. The course will allow the students to gain an appreciation for the history and possible futures of various disciplines within electrical and computer engineering. Students will spend most of their time in the lab working on these projects with classroom instruction for support. The course will introduce basic electrical concepts including charge, voltage, current, energy, power, resistance, capacitance, inductance, and Kirchoff's laws. Practical digital and analog electronic systems will also be

introduced to illustrate advanced topics that are treated completely in subsequent electrical engineering courses.

CE/EE 112 - Electric Circuits-I

Credit Hours: 2-0
Prerequisites: None
Fulfills: CE Foundation, EE Foundation, and ECE Minor Foundation

This course introduces basic DC and AC steady-state analysis for linear circuits. Topics discussed in this course include circuit elements, Ohm's law and Kirchhoff's laws, node and mesh analysis, energy storage elements, Thevenin and Norton theorems, Phasors and sinusoidal steady state analysis. Computer applications in circuit simulation and numerical solution is also discussed.

PLAY 113 - Design Your Habib Experience

Credit Hours: 0-1
Prerequisites: None
Fulfills: CE Design

This course will take you through the basics of Human-Centered Design: an approach to problem-solving that involves empathizing with people; defining problems; generating ideas; prototyping solutions; and testing to learn what works and what doesn't. The first twelve weeks of the course will take students through the design process, practically applying key methods and mindsets to tackle problems around us at Habib. For example, this could be redesigning the university food experience, or designing a new student governance model. In the last three weeks of the course, students will apply their skills and knowledge to a more personal challenge: designing their own Habib experience.

CS 101 – Algorithmic Problem Solving

Credit Hours: 3-1
Prerequisite: None
Fulfills: CE Foundation

Motivates computer programming as a means to solve problems; introduces the basic components of problem solving: repetition, decision making, data storage and manipulation, input/output, modularity, top- down design; develops expertise in the corresponding constructs – variables, data types, iteration, conditionals, functions, file and console I/O, and recursion – in a high-level programming language.

MATH 101 - Calculus I

Credit Hours: 4-0
Prerequisites: None
Fulfills: CE Engineering Sciences and Computing.

The course covers important pre-requisite content related to functions, their behavior, and multiple contexts for which they serve as an important modelling tool. This course fulfills a foundational

mathematics course requirement for the Electrical Engineering, Computer Engineering and Computer Science majors. It is also a mandatory requirement for all non-DSSE students wishing

to pursue a Mathematics Minor.

CE 222/EE 172/CS 130 - Digital Logic and Design

Credit Hours: 3-1
Prerequisites: None
Fulfills: CE Computing Systems Design, and ECE Minor Foundation

Introduction to the design of digital hardware, realization of computation with logic gates; Boolean algebra, design of combinational logic circuits, and analysis and design of clocked sequential logic circuits, circuits for arithmetic operations; introduction to hardware description language and its application to logic design.

ENGR 291 - Engineering Workshop and Design

Credit Hours: 0-1
Prerequisites: None
Fulfills: CE Design, EE Design, and ECE Minor Foundation

This course aims to introduce students to hands-on engineering skills, necessary for creating their own prototypes. Topics covered in this course include introduction to engineering design process, shop safety, engineering drawing, solid modeling (CAD), 3D printing, effective use of basic hand tools such as saws and files, machining (Lathe, Milling, Drill press), CNC machining, soldering techniques, and PCB design and printing. The course work emphasizes practical skills through lab activities and project. Students will be required to work with different materials including metal, wood, and plastic.

CE 171 - Data Structures and Algorithms

Credit Hours: 3-1
Prerequisite: CS 101 – Programming Fundamentals (Theory + Lab)
Fulfills: Algorithms & Software for CE

Motivates the design of algorithms by exploring various algorithms for a single task: linear search and binary search, bubble sort, insertion sort, selection sort, merge sort, quick sort; introduces techniques to reason about and compare algorithms: asymptotic analysis and notation, Master theorem; introduces frequently used data structures: list, tree, graph, stack, queue; discusses and analyzes basic operations on the data structures: infix, postfix, and prefix traversal, breadth-first and depth-first search, computation of graph.

CS 113 - Discrete Mathematics

Credit Hours: 3-0
Prerequisite: None
Fulfills: CS Foundation

Equips students with essential mathematical tools that will be encountered in future Computer Science courses; develops a capacity for formal mathematical manipulation and abstract thought; topics include: propositional logic, predicate and quantifiers, sets, functions, sequences, summations, relations, partial orderings, proofs, mathematical induction, pigeonhole principle, permutations and combinations, graphs, graph isomorphism, Euler and Hamiltonian paths, and trees.

MATH 102 - Calculus II

Credit Hours: 3-0
Prerequisites: MATH 101 - Calculus
Fulfills: CE Engineering Sciences and Computing.

Calculus is a very important part of Applied Mathematics which in turn serves as an important tool in Science and Engineering. In Calculus I you studied the fundamental concepts of function and the techniques of differentiation and integration. Calculus II builds upon the concepts of calculus learned in the previous course and extends them to other areas of Applied Mathematics such as multivariable functions and vectors.

CE 321/EE 371/CS 330 - Computer Architecture

Credit Hours: 3-1
Prerequisites: CE 222/EE 172/CS 130 - Digital Logic Design (Theory + Lab)
Fulfills: CE Computing Systems Design, and ECE Minor Elective

Studies the architecture of processors that enable general purpose computing and develops hands-on expertise in developing complex logical components. Topics include instruction set architecture, addressing modes, processor design and computer arithmetic, pipelining, memory systems, fetch execution cycle, processor implementation on FPGA using Verilog HDL.

CE 272/CS 242 - Object Oriented Programming

Credit Hours: 3-1
Prerequisites: CS 101 – Programming Fundamentals (Theory + Lab)
Fulfills: CE - Algorithms and Software

Introduces object oriented and related memory concepts; motivates C++ as the language of choice; topics include: pointers and structs, objects, heap allocation, data encapsulation, classes, namespaces, constructors and destructors, virtual functions and destructors, operator overloading and standard input/output, inheritance and polymorphism, templates, standard library containers, and software design using UML 2.0.

CE 361/EE 354/MATH 310 - Introduction to Probability and Statistics

Credit Hours: 3-0
Prerequisites: MATH 102 – Calculus II
Fulfills: CE Engineering Sciences and Computing

Set theory and counting principles, axiomatic definition of probability, independence and conditional probability, Bayes' theorem; random variables (RVs) and their cumulative distribution function, probability mass functions, probability density functions and moments; joint RVs; limits theorems; statistics; applications.

Natural Science Elective

The development of scientific method and analysis is a fundamental feature of modernity and its forms of knowledge. A natural science requirement is standard in higher educational and liberal institutions. To ensure the scientific literacy of all our graduates, students pursuing a CS major are required to complete 02 Natural Science courses, one with lab component and the second could be a course with or without lab component.

Students pursuing a CE major are required to complete 01 Natural Science course, with or without lab component.

CE/EE 211 - Basic Electronics

Credit Hours: 3-1
Prerequisites: EE/CE 112 - Electric Circuits-I
Fulfills: CE Electronics, and ECE Minor Foundation

The course aims to introduce students to semiconductor devices, with emphasis on application of these devices in realizing analog and digital electronic circuits. The course starts with an introduction to semiconductors, energy bands, valence bonds, doping, n-type and p-type semiconductors. The electronic devices, such as PN junction diode, bipolar junction transistor (BJT) and Metal-oxide semiconductor field- effect transistor (MOSFET), along with their applications are discussed in detail. Biasing circuits, single transistor amplifiers and their frequency are also discussed. Circuit simulations using PSpice (OrCAD) forms an important bridge between the theory discussed in class and lab experiments.

CE 251/EE 252 - Signals and Systems

Credit Hours: 3-1
Prerequisites: MATH 102 - Calculus II, and CS 113 - Discrete Math
Fulfills: CE Information Systems, and ECE Minor Foundation

The topics covered in this course include types of signals; unit impulse and unit step functions; linear time invariant (LTI) systems and their properties; convolution sum and convolution integral; Fourier series, Fourier, Laplace and Z transforms; analysis and characterization of LTI systems using various transforms, Sampling.

CE 332/EE 376 - Microcontrollers and Interfacing

Credit Hours: 0-1
Prerequisite: CE 222L/CS 130L/EE 172L – Digital Logic and Design Lab
Fulfills: CE Computing Systems Design, EE Core, and ECE Minor Elective

Microcontrollers play a central role in modern life, controlling everything from the engine of a car, to domestic and office machinery. Microcontroller fundamentals including architecture, assembly language programming, and interfacing. Applications of industry-standard microcontrollers in embedded systems. Employs software design tools, simulators, and hardware trainers. Will focus on interfacing the ARM RISC processor to motors, actuators and sensors.

MATH 205 - Linear Algebra

Credit Hours: 3-0
Prerequisite: None
Fulfills: CE Engineering Sciences and Computing

Topics covered: A brief revision of vector algebra including lines and planes in 3D and matrices, Determinants, Symmetric matrices, and quadratic forms; Elementary row and column operations of a matrix; Systems of linear equations and their solutions, existence, and uniqueness of solutions; Vector spaces; Inner products and ortho-normalization; Orthogonal transformations and rotations; Linear transformations, orthogonality, QR factorization, Hermitian and Unitary

transformations; Least squares analysis and approximations; Singular value decomposition; Direct sum decomposition; and Caley- Hamilton Theorem.

CE 341 - Data Communication & Networking

Credit Hours: 3-1
Prerequisites: None
Fulfills: CE Networking and Security, and ECE Minor Elective

It is the first course on networking therefore no prior background is expected. This course will not only introduce students to the basics of the communication of data in the networks of computer but will also enable to develop some insight towards the core issues related to the communication models and different network devices.

CE 324/CS 232 - Operating Systems

Credit Hours: 3-1
Prerequisites: CE 222/EE 172/CS 130 - Digital Logic Design (Theory + Lab)
Fulfills: CE Computing Systems

The student will be taught principles of modern operating systems. In particular, the course will cover details of concurrent processes, multi-threads, CPU scheduling, memory management, file system, storage subsystem, and input/output management. This will be accomplished by integrating theory and practice through coordinated lecture and lab hours.

CE 373/CS 355 - Database Systems

Credit Hours: 3-1
Prerequisites: CE 171/CS 102 - Data Structures and Algorithms
Fulfills: CE Algorithms and Software

Explores in detail the theoretical and practical aspects of Relational Database Management Systems (RDBMS); develops an understanding of database modeling, relational algebra, structured query language (SQL), components of Database Management System (DBMS), transaction management and concurrency control, database fine-tuning via indexing and partitioning, and database connectivity with front-end applications; discusses administrative aspects of database systems including database security, database management vs data warehousing vs data mining, and big data and its challenges.

CE 363/MATH 322 - Statistics and Inferencing

Credit Hours: 3-0
Prerequisites: None
Fulfills: CE Engineering Sciences and Computing

Introduces probabilistic modelling for problems of inference and machine learning from data, emphasizing analytical and computational aspects. Distributions, marginalization, conditioning, and structure, including graphical and neural network representations. Belief propagation, decision-making, classification, estimation, and prediction. Sampling methods and analysis. Introduces asymptotic analysis and information measures. Computer simulation-based computational component explores the concepts introduced in class in the context of contemporary applications. Students design inference algorithms, investigate their behavior on real data, and discuss experimental results.

CE 352 - Digital Signal Processing

Credit Hours: 3-1
Prerequisites: CE 251/EE 252 – Signals and Systems (Theory + Lab)
Fulfills: CE Information Systems, and ECE Minor Elective

Introduction to digital signal representations in time and frequency domains; signal manipulations via filters and resampling; signal creation and capture and processing with real-time computing machinery.

CE/EE 391 - Engineering Design and Innovation

Credit Hours: 0-2
Prerequisites: None
Fulfills: CE Design

This course aims to cultivate skills needed to produce great designs, be a more effective engineer, and communicate with high emotional and intellectual impact. This is accomplished by working on projects centered around a locally contextualized wicked problem and students are expected to develop a solution to their identified problem by the end of semester. During the course of the semester, students will study and apply techniques suited for various steps of the design process. Students will come to appreciate that a design problem involves multiple stakeholders, come to terms with the ambiguity that shows up in design problems, make decisions in presence of multiple conflicting objectives and constraints, handle uncertainty, think as part of a team, learn how to manage the progress of their project, and communicate their design effectively.

CE 374/CS 353 - Software Engineering

Credit Hours: 3-0
Prerequisites: CE 171/CS 102 – Data Structures and Algorithms, and CE 271/CS 201 – Data Structures II
Fulfills: CE Algorithms and Software

Approaches software engineering as the study and practice of a collection of concepts, techniques and tools which enable programmers to design, build, and maintain large software systems in a reliable and cost effective way; develops skills and understanding that function as the basis for many of the more advanced analysis and design practices encountered in the industry; topics include: systems development process, stakeholders and their roles, systems development project needs, software process methodologies, spiral and RUP, software analysis and requirement discovery, data modelling, SAD and OOAD, UML, use case diagrams, software project management, project scope, network diagrams and CPM, agile methodologies,

XP, Scrum and FDD, class diagrams, realization of use cases, object-oriented design, sequence diagrams, activity diagrams, state transition diagrams, user interface design, software testing, software construction and maintenance.

CE 325 - Digital Systems Design

Credit Hours: 3-0
Prerequisites: CE 222/EE 172/CS 130 - Digital Logic Design (Theory + Lab)
Fulfills: CE Computing Systems Design

The main focus of this course would be on the design methodology enabled by an HDL. Thus, the

language itself would have a subordinate role. The course aims to demonstrate by theory, examples, and exercises the importance of partitioning a digital machine to expose its data path, status (feedback) signals, and controller (finite state machine). This effort leads to a much clearer and more straightforward approach to design.

At the end of this course, CE students would be able to (1) understand the operation of a sequential machine and (2) appreciate the time-sequential interaction between the signals produced by the controller, the operations in the data path, and the signals reported back to the controller from the data path, all with the aim of developing synthesizable, latch-free, and race-free designs.

Most importantly, the course would emphasize industry practices, and not unwittingly encourage students into academic styles of modeling without regard for whether a model can be synthesized. Consequently, the course aims to teach the hardware modeling/compilation paradigm and to anticipate the results of synthesis.

CE/EE 491 - Capstone Project I

Credit Hours: 3-0

Prerequisites: ENGR 291 Engineering Workshop, CE 331/EE 376 - Microcontrollers and Interfacing, and CE/EE 391 Engineering Design & Innovation

Fulfills: Design in Engineering, and Design Project

By the senior year, students have acquired sufficient breadth in Electrical Engineering (EE) and are on their way to acquire depth in one or more areas of specialization through technical electives. Intellectual maturity also requires that students understand their education in the broader context of the world and are prepared to make committed choices as participants of this complex world. The capstone design project, offered as a two semesters sequence, provides students with an opportunity to reflect on their entire educational experience, integrate the knowledge and skills acquired in earlier years, form connections within and across disciplines, and synthesize a solution to a problem connecting them to the broader issues of their discipline as well as the world they're about to enter.

CE/EE 492 - Capstone Project II

Credit Hours: 3-0

Prerequisites: CE/EE 491 – Capstone Project I

Fulfills: Design in Engineering, and Design Project

This year-long sequence represents the culmination of study towards the BS degree. Students work individually or in small teams on a project in which they utilize the knowledge acquired during the first three years of education. Each project is closely supervised by a faculty member and each team produces a comprehensive report at the end of the project.

9.8.2. Professional Practice:

The students are required to enroll in two of the following courses falling under the Professional Practices category:

MGMT 301 - Technology Management and Entrepreneurship

Credit hours: 2-0

Prerequisites: None

Topics include: managing technological transitions, intellectual property, creating and managing an innovative organization, managing research and development, organizational learning, economist and sociologist views of entrepreneurship, the process and management of entrepreneurship, the importance of innovation, teamwork, financial and marketing aspects, product quality; study will be supplemented with case studies.

MGMT 304 - Fundamentals of Intellectual Property

Credit hours: 3-0
Prerequisites: None

A primary purpose of this course is to raise awareness of Intellectual Property (IP) amongst students and to introduce the topic of IP, associated law, and some of its primary branches, to a non-legal (e.g., STEM, social sciences, design, liberal arts) audience so that they may effectively navigate through the landscape of various intellectual property regimes and related family of (legal) rights (IPR). Whilst these rights are rooted in law, intellectual property education has branches which touch many areas of academic research and commercial activity, including: economics, finance, taxation, human rights, ethics, education, governance and management. Studying intellectual property in a non-law curriculum can be seen as an 'opportunity' to engage with a vital topic that links commercial, legal and technical disciplines. Another important purpose of this course is to introduce students to the increasingly important area of IP management (and IP strategy). IP and intangible assets are driven by investments in R&D, advertising and marketing, education and training, management information systems, organizational structure, and so on. The development of such assets can involve invention or some other creative step, as well as innovation. The investments and the activities involved are all inherently risky. Thus, understanding the management of IP and intangible assets requires inputs from a variety of disciplines, including economics, law, accounting and finance, management, and so on. An exposure to some key tactics on the strategic management of IP supplemented with relevant IP management case studies can be of immense value in todays and tomorrow's expanding ecosystem.

MGMT 320 - Principles of Management

Credit Hours: 3-0
Prerequisites: None

The course on Principles of Management for Tech Professionals introduces management as a discipline and process to tech professionals. This course includes evolution and scope of management, decision- making, planning, strategy, organizing, staffing, leading, control, change, and the importance of management in the global environment and ethical considerations of management decisions. Hence, the course provides a framework that will enhance a person's effectiveness in the business.

MGMT 321 - Engineering Project Management

Credit Hours: 3-0
Prerequisites: None

Through using textbook, discussions, assignments and real-world examples, the engineering professionals will learn how to identify, define, plan, execute, monitor, control, and close projects. They will build project components, organize work efficiently, effectively and help them to control changes. The students will use tools to build works schedules, allocate resources and

manage cost of any project. This will help them to get a hands-on training of using project management tools for the smooth flow of various stages of project that is the need of time and most demanded skill by the employers all around the world.

MGMT 322 - Operations Management

Credit Hours: 3-0

Prerequisites: None

The course aims to provide an understanding to identify, define, plan, execute, monitor, control, optimize and improve operations and processes in both manufacturing and service industries. For many different types of operations either in the tangible goods industry or the intangible service industry, this course aims to familiarize students with the major operational issues that challenge entrepreneurs and managers and provide them with the basic language, concepts, insights, and analytical tools to deal with these issues.

MGMT 323 - Supply Chain Management

Credit Hours: 3-0

Prerequisites: None

The course aims to provide an understanding of fundamental concepts of supply chain management. All functional areas of supply chain management are explored in an integrated view of procurement, manufacturing and operations management, transportation and logistics, inventory and warehousing, demand planning, scheduling, network design, collaboration, and performance measurement. Topics may also cover supply chain financial metrics, strategy, and risk management for demand-driven value networks.

ECON 302 - Engineering Economics

Credit Hours: 3-0

Prerequisites: None

Topics include: Application of economic principles to engineering solutions, time value of money, cash flow analysis, quantization of profitability, methods of evaluating investments, comparison of alternative investments, inflation, depreciation, resource depletion, economic analysis of projects, economic management of engineering projects.

9.8.3. Computer Engineering Elective Courses

The list of elective courses will be updated.

Integrated Science and Mathematics

10.1. Faculty

Faculty	Designation
Dr. Aeyaz J. Kayani	Program Director & Assistant Professor
Dr. Humaira Qureshi	Associate Professor
Dr. Sameena Shah Zaman	Associate Professor
Dr. Humaira Jamshed	Assistant Professor
Dr. Omar Farooq Anjum	Assistant Professor
Dr. Usman Salahuddin	Assistant Professor
Mr. Rameez Ragheb	Lecturer
Ms. Sajal Sohail Rana	Lecturer

10.2. Vision

Integrated Sciences and Mathematics (ISciM) at Habib University offers a diverse range of rigorous foundational and research-based courses that allow students from all disciplines to broaden their understanding of natural science and mathematics. Our interdisciplinary offerings profiting from various forms of design and community-based projects allow students to develop essential hard and soft skills required to understand and address complex problems. Key thrust areas for the program include Energy, Environment, Climate Change, Infectious Diseases, Global Health, Theoretical Physics and Applied Mathematics. The program currently offers two academic minors in Physics and Mathematics.

10.3. Department Goals

Through ISciM, based on their course selection, the graduating Habib students will:

1. Understand the foundations and the applications of the scientific method
2. Understand the fundamentals of energy, environment, and global warming and learn key skills to address issues of present times

3. Develop experimental skills in physics, chemistry, and biology; develop a strong foundation in physics, chemistry, bio-sciences, environmental science, energy, and mathematics
4. Understand the human body functions at cellular and molecular level and the effects of nutrition, microorganisms and environment on human health and society
5. Develop strong skills in data analysis with an ability to use various software tools
6. Develop a strong grasp on scientific writing
7. Develop the ability to understand current research in various fields of science

10.4. Minors Offered by the ISciM Program

S. No	Minors	Offered by	Offering School	No. of Courses	No. of Credit Hours
1	Biosciences	ISciM	DSSE	05	17
2	Physics			07*	20
3	Mathematics			07	20

*Physics minor: In addition to the 7 courses, 2 lab courses are also to be taken to fulfill the foundational requirement.

Requirements of the minors can be found in the 'Minors' section of the Course Catalog.

10.5. Course Descriptions

10.5.1. Biosciences

BIO 101 Cell Biology & Public Health

Credit Hours: 3+1
Fulfills: Natural Science Requirement
Prerequisite: None

This course provides an introduction to cellular and molecular biology and builds its connection with human biological processes; there will be a prime focus on developing skills to communicate biological concepts to laymen. Topics include: Prokaryotic and eukaryotic cells, structure and function of cellular organelles, cells tissues and organ systems, movement across cell membranes, cellular reproduction, DNA replication, transcription and translation, Mendelian genetics, blood groups, introduction to the immune system and vaccines, dengue viral infection, and cancer development. Workshops on communication design in public health will be integrated.

BIO 211 Understanding the Human Body- The Physiology of Everyday Life

Credit Hours: 4
Fulfills: Natural Science Elective
Prerequisite: None

In this course you will learn how we use our body every day to respond to an ever-changing environment, and the fascinating ways we deal with physical, emotional, and biological threats. You will understand how our heart and vessels work together to circulate the blood, all the

amazing things our blood is capable of doing (from maintaining homeostasis to fighting infection), how our brain and nerves protect us, and how hormones ensure proper growth, development, and repair. You will explore our role in some of the common health problems afflicting mankind today, and develop a systematic, integrated understanding of how the body functions.

In the labs part, you will see these systems in action, and apply the concepts first hand by measuring blood pressure and heart rate, and relating it to exercise physiology. You will examine the blood composition and blood types, witness the microbes on and around you and test them against antibiotics, gather and interpret data on sleep quality, anxiety levels, eating behaviors, and traits such as focus, flexibility, and adaptability.

This course is for a diverse student pool and will be particularly interesting for individuals who are intrigued by the human body. There are no prerequisites and students with a non-biology background will equally enjoy the experience.

Other Biosciences elective courses offered by the program in previous semesters include the following:

- BIO 102 The Secret World of Microbes
- BIO 102+BIO 104L Introduction to Ecology and Evolutionary Biology
- BIO 111 Food and Nutrition
- BIO 121 Introduction to Biochemistry
- BIO 151 Bioscience in Cinema: Myths and Reality
- BIO/LIT 201 Digitally Yours Visual Novels About Diseases
- BTEC 101 Introduction to Biotechnology
- BIO 114 + BIO 114L Biodiversity in the city
- BIO 103/SDP 301 Global Health and Disease

10.5.2. Physics

PHY 101 Mechanics and Thermodynamics

Credit Hours: 3+0
Fulfills: Natural Science requirement, Physics Minor
Prerequisite: None

Mechanics and Thermodynamics Topics include: Units and physical quantities, vectors, motion in 1-dimension, motion in more than 1-dimension, Newton's laws of motion and their applications, work and energy, potential energy and conservation law of energy, momentum and impulse, rotation of rigid bodies, dynamics of rigid bodies, gravitation, thermal properties of matter, laws of thermodynamics.

PHY 101L Mechanics and Thermodynamics Lab

Credit Hours: 1+0
Fulfills: Natural Science requirement, Physics Minor
Prerequisite: PHY 101

Experiments include: simple harmonic motion observed through webcam, waves and oscillations, standing waves, resonance, moment of inertia of a tennis ball, rotational mechanics, rotational inertia, rotational friction, conservation of energy, latent heat of liquid nitrogen, heat capacity of solids, determined from boil-off of liquid nitrogen, conservation of momentum -

elastic and inelastic collision, rotational motion, mass on a spring, basics of uncertainty analysis, Maxwell's wheel, light polarization, heat transfer, conduction, convection, Newton's law of cooling, temperature oscillations, Fourier analysis.

PHY 102L Advanced Physics Lab

Credit Hours: 1+0
Fulfills: Physics Minor Foundational Course, Natural Science
Prerequisite: PHY 102

Experiments include: determination of Curie point of a Ferro-magnet by controlled electric heating, observing Hall effect in semiconductors, magnetic moment of a conductor loop in a magnetic field, determining Verdet's constant, Frank-Hertz Meter, determination of Planck's constant from the spectrum of a tungsten light bulb, optical activity of a chiral (sugar) solution, imaging electron trajectories using a magic eye, image analysis, Lenz's Law, band gap measurement of pure Ge, magnetic pendulum, exploring phase portraits, chaos, bifurcations, Spectral Lines of different gasses.

PHY 202 Quantum Mechanics

Credit Hours: 3+0
Fulfills: Physics Minor Foundational Course, Natural Science
Prerequisite: PHY 101, PHY 201, MATH 203

Topics include: Particle aspects of radiation, wave aspects of particles, quantum systems and indeterminacy, quantization rules, wave packets, mathematical tools of quantum mechanics, postulates of quantum mechanics, one-dimensional problems in quantum mechanics, angular momentum, more than 1-dimensional problems, rotations and addition of angular momenta, time dependent and independent approximation methods in quantum mechanics, scattering theory.

PHY 241/EE 241 Electromagnetic Theory

Credit Hours: 3+0
Fulfills: EE Core, ECE Minor Elective, Physics Minor Required Course

The study of electrostatic and magneto-static fields in free and material spaces; solving boundary-value problems; extension of static fields to time-varying fields and electromagnetic waves; Maxwell's equations; propagation of electromagnetic waves through different types of media (unbounded media and guided structures) and their behavior at the interfaces.

PHY 304 - Physics of Semiconductor Devices

Credit Hours: 3-0
Prerequisites: None
Fulfills: Circuits and Electronics requirement for EE Majors, Elective for Physics Minor

Understanding of semiconductor device physics plays a key role in understanding the world of modern electronics. This course introduces basic concepts of quantum theory of solids and presents the theory describing the carrier behaviors in semiconductors. The course balances fundamental physics with application to semiconductors and other electronic devices. This course also presents in-depth discussion and analysis of PN junction and metal- semiconductor contacts including equilibrium behavior, current and capacitance responses under bias, breakdown, non-rectifying behavior, and surface effect.

Other Physics elective courses offered by the program in previous semesters include the following:

- PHY 300/CS 314 Quantum Computing
- PHY 301 Classical Mechanics
- PHY 302 Mathematical Methods for Physics
- PHY 351 Introduction to Statistical Mechanics
- PHY 352/MATH 352 Group Theory for Physicists
- PHY 358 Astro Statistics: Statistical Inference in Astrophysics/Cosmology
- PHY 401 Quantum Mechanics II
- PHY 104 Introduction to Nano Science
- PHY 201 Modern Physics
- PHY 102 Electricity and Magnetism

10.5.3. Mathematics

MATH 101 Calculus I

Credit Hours: 3
Fulfills: This course meets requirements for EE, ECE and CS majors and Mathematics Minor for non-DSSE students.
Prerequisite: None

The course covers important pre-requisite content related to functions, their behavior, and multiple contexts for which they serve as an important modelling tool. This course fulfills a foundational mathematics course requirement for the Electrical Engineering, Computer Engineering and Computer Science majors. It is also a mandatory requirement for all non-DSSE students wishing to pursue a Mathematics Minor.

MATH 102 Calculus II

Credit Hours: 3
Fulfills: This course meets requirements for advanced courses in EE, ECE and CS majors and Mathematics & Physics Minor for non-DSSE students.
Prerequisite: MATH 101

Calculus is a very important part of Applied Mathematics which in turn serves as an important tool in Science and Engineering. In Calculus I you studied the fundamental concepts of function and the techniques of differentiation and integration. Calculus II builds upon the concepts of calculus learned in the previous course and extends them to other areas of Applied Mathematics such as multivariable functions and vectors.

MATH 106 Music and Mathematics

Credit Hours: 3
Fulfills: This course meets requirements for a Quantitative Reasoning elective and is a required course for the completion of a South Asian Music Minor.
Prerequisite: None

This course serves as a bridge between two areas of learning that are not popularly associated with each other. However, music and its development in various cultures around the world have often relied upon mathematical frameworks. The study of mathematical concepts behind musical ideas is a classic example of interdisciplinary learning in the liberal arts model.

This course will introduce the rudiments of Western and South Asian musical theory, with a focus on the mathematics incorporated in their development and overall structure. The course will explore the properties of the twelve-tone scale, the historical evolution of tuning and temperament, the idea of combinational tones and consonance, and the physics behind the construction of musical 96 instruments. Looking primarily at South Asian and Western musical genres, students will also analyze the mathematics involved in music composition, for both melody and rhythm.

MATH 202 Engineering Mathematics

Credit Hours: 3
Fulfills: Mandatory Math requirement for all EE, CS students
Prerequisite: MATH 102

Topics include: Vector Calculus (vector functions, line and surface integrals). Elementary methods for solving first order ODEs (direct integration and substitution) with geometric interpretation and classification, separable ODEs, method of integrating factors. Vector algebra (including matrix algebra, eigenvalues and eigenvectors, quadric surfaces). Dynamical systems (linear systems of ODEs, stability and phase portraits of dynamical systems). Second, order ODEs - elementary methods including their classification, reduction of order techniques, linear second order ODEs with constant coefficients, and finding particular solutions. Orthogonal functions and Fourier series solutions (generalized and trigonometric methods), convergence in the mean and pointwise convergence, odd and even expansions, half-range expansions. Partial differential equations (PDEs) (wave, heat and Laplace equations), solutions using Fourier series and Laplace transforms, and Schrodinger equation.

CE 363/MATH 322 - Statistics and Inferencing

Credit Hours: 3-0
Prerequisites: None
Fulfills: CE Natural Sciences and Mathematics

Introduces probabilistic modelling for problems of inference and machine learning from data, emphasizing analytical and computational aspects. Distributions, marginalization, conditioning, and structure, including graphical and neural network representations. Belief propagation, decision-making, classification, estimation, and prediction. Sampling methods and analysis. Introduces asymptotic analysis and information measures. Computer simulation-based computational component explores the concepts introduced in class in the context of contemporary applications. Students design inference algorithms, investigate their behavior on real data, and discuss experimental results.

MATH 205 Linear Algebra

Credit Hours: 3
Fulfills: Mandatory Math requirement for all DSSE students
Prerequisite: MATH 201

Topics covered: A brief revision of vector algebra including lines and planes in 3D and matrices, Determinants, Symmetric matrices, and quadratic forms; Elementary row and column operations of a matrix; Systems of linear equations and their solutions, existence, and uniqueness of solutions; Vector spaces; Inner products and ortho-normalisation; Orthogonal transformations and rotations; Linear transformations, orthogonality, QR factorization, Hermitian and Unitary transformations; Least squares analysis and approximations; Singular value decomposition; Direct sum decomposition; and Caley-Hamilton Theorem.

EE 354/MATH 310 Introduction to Probability and Statistics

Credit Hours: 3
Fulfills: This course meets program requirements and Quantitative Reasoning (QR) forms of thought for EE, CE & CS majors.
Prerequisites: MATH 102

In the present world, we encounter situations where we have to make decisions on the basis of incomplete or imperfect information. The theory of probability helps provide a formal mechanism for understanding, quantifying, and dealing with uncertainty, which is ever present in our lives, pure science, or engineering applications. Simply, by uncertainty we mean the condition when outcomes or future are not completely determined or can be captured by a deterministic function; they depend on a number of factors and perhaps just on pure chance. A lot of our present-day technologies will not be possible without an understanding of how to make decisions in presence of uncertainty. These technologies include all forms of wireless communication, servers, speech processing systems, network systems and so many more. Equipping yourself with tools to deal with uncertainty will help you with whatever you wish to pursue in life.

This course will cover the foundations of probability, random variables and statistics, with a plethora of examples from electrical engineering, computer engineering, computer science, and everyday life. The course content can broadly be divided into three categories: -

1. Fundamentals of probability,
2. Common probability models,
3. Inferences & statistics.

Other Mathematics elective courses offered by the program in previous semesters include the following:

- MATH 105 The Art of Mathematics
- MATH 203 Advanced Differential Equations
- MATH/PHIL 222 Paradox and Infinity
- MATH 304 Real Analysis
- MATH 305 Complex Analysis
- MATH 333 History of Number Theory
- MATH 351 Topology
- MATH 107 Lie Detector: An Introduction to the Practice of Statistics
- MATH 108 An Introduction to the Practice of Statistics

10.5.4. Other ISciM Electives

Other elective courses offered by the program in previous semesters include the following:

- ENER 104 Renewable Energy: Why, What and How?
- SCI 101 Introduction to Sustainability
- SCI/CS 122 Inventing the Information Age
- SCI 221 Design thinking for Sustainability
- ENVS 102 Introduction to Environmental Systems
- ENVS 201 Science of Sustainability
- ENVS/SDP 251 Water: Science, Society and Policy
- ENVS 301 Introduction to Environmental Engineering

11. Minors at Habib University

11.1. What is a Minor?

Modern education is primarily centered on training individuals to succeed in focused fields of specialization, but in a world with constantly changing dynamics, it is no longer realistic to confine yourself to an isolated field of specialization. Minors are a way for you to graduate with more than one area of specialization, and due to the interdisciplinary nature of Habib University's major and minor programs, skills learned in both types of specializations can be used interchangeably.

Minors are an integral part of the Liberal Arts and Sciences educational experience at HU as they allow you to explore your interests, personalize, and diversify your undergraduate programs.

This unique academic experience will help you develop a critical understanding of the world you live in by giving you the opportunity to engage with, think critically about, and be able to solve the complex problems of today.

11.2. Benefits of Taking a Minor

All HU students, regardless of major, can expand their fields of specialization by taking an optional minor program to supplement their major program. Minors help in honing a variety of skills including the capacity to engage in intellectual and scientific inquiry. The advantages vary, as each individual specialty will give you a unique perspective in the way you perceive and exist in the world today.

Graduating with a minor has many advantages, including:

- A chance to pursue a wide range of post-graduate degree programs, dependent on your major-minor combination
- The ability to qualify for an expansive range of career options due to a uniquely specialized degree program
- The development, and utilization, of a variety of interdisciplinary skill-sets that will help students in your future entrepreneurial and academic endeavors

Minors expand students' future possibilities and allow them to graduate with a honed interdisciplinary focus. An interdisciplinary approach towards society's complex social, political and scientific problems will allow students to solve modern day problems using innovative.

11.3. List of Minors offered at Habib University

S. No	Minors	Offering Program	Offering School	No of Courses	Min Credit Hours+
1.	Comparative Literature	CH	SAHSS	06	18
2.	Philosophy			05	15
3.	Religious Studies			05	15
4.	History			05	15
5.	South Asian Music	Center for South Asian Music and CH		05*	15
6.	Communication	CND		05	19
7.	Design			05	18
8.	Social Development & Policy	SDP		05	18
9.	Physics	ISciM	DSSE	07**	20
10.	Mathematics			07	20
11.	Bioscience			05	17
12.	Computer Science	CS		07	21
13.	Electrical & Computer Engineering	ECE		07	18

+minimum credit hours required.
*South-Asian music minor – an additional 3 semesters of Practicum in the Music room are required.
**Physics minor – in addition to the 7 courses, 2 lab courses are also to be taken to fulfill the foundational requirement.

Minors Offered by The School of Arts, Humanities and Social Sciences

11.4. Comparative Literature (CL) Minor

Offered by: Comparative Humanities (CH) Program

The minor in comparative literature will feature a range of courses explaining how world literatures have adapted to, and been transformed by the rise of English as a global medium for literary production. The aim of the minor is to introduce students to multiple ways to analyze texts and produce a theoretically informed interpretation of several texts and traditions in dialogue. It will enable students to work comparatively and fluidly with texts and read, write, and think critically, creatively, and imaginatively. This makes Comparative Literature compelling for both graduate schools across the human and social sciences and employers across a range of sectors of the economy.

11.4.1. Learning Outcomes

1. Locate major writers in English, Urdu, and World Literature within their respective linguistic, cultural, and historical periods.
2. Define and discuss the evolution of themes, styles, and techniques across genres and within traditions.
3. Work comparatively and fluidly with texts in translation and in conversation with their respective linguistic and cultural milieu.
4. Explain how world literatures have adapted to, and been transformed by, the rise of English as a global medium for literary production.
5. Analyze texts closely using methods appropriate to literary analysis and translation studies.
6. Critically assess conceptual problems integral to the nature of literary and aesthetic experience.
7. Produce a theoretically informed interpretation of several texts and traditions in dialogue.
8. Read, write, and think critically, creatively, and imaginatively.

All Habib University students (class of 2024 onwards), except those majoring in the CH program, are eligible to declare and pursue the CL Minor.

Requirements for the Comparative Literature Minor for Class of 2029 are detailed on the next page.

11.4.2. Requirements for the Comparative Literature Minor (Class of 2029)

Courses	Credit Hours	No. of Courses
Core Courses		
LIT 104: What is World Literature? **OR** Any another course that satisfies the requirement	03-04	01
LIT 225 Intro to Literary Theory and Criticism	03	01
CORE 121 Jehan-e-Urdu*	04	01
LIT Electives (Two upper division Literature electives)		
300-level LIT elective	03-04	01
400-level LIT elective	03-04	01
CH Elective One course within the area of concentration - South Asian or World Literature		
CH Elective (excluding from the Habib Liberal Core)	03-04	01
Overall	**18 (min)**	**06**

- Students must take all the 06 courses as specified above to qualify for the CL minor.
- Minimum 18 credits.
- Courses cleared with C minus / passing grade can go on the grid for CL Minor.
- *Can be double counted in both HLC & minor
- No single Habib Liberal Core course can count towards fulfilling requirements towards completion of more than one of CL, HIST, RELS, and PHIL Minors

11.5. Philosophy Minor

Offered by: Comparative Humanities (CH) Program

The study and practice of Philosophy is concerned with the re-organization of existing patterns of thought and the generation of new thought and concepts, directed towards the transformation of humans and their worlds. The minor gives students philosophical training that enables them to explore continuities between Philosophy and other aspects of their ongoing curricular, professional and personal experiences. Students completing the minor will have sufficient capacity to think and write about universal philosophical themes pertaining to ontology, epistemology, aesthetics, ethics, and politics.

The cognitive qualities of analytical, critical and synthetic power, as well as the power of conceptual innovation, that are all associated with the practice of philosophy make philosophical study attractive both for graduate studies, as well as for employers across a range of sectors of the economy.

11.5.1. Learning Outcomes

1. Develop the capacity to engage in intellectual inquiry that runs in the circuit of existence, knowledge, conceptions of the human and the subject, and the history of Philosophy.
2. Develop the capacity to raise, and to work through ethical questions, including questions in meta-ethics, applied and professional ethics and questions pertaining to the ethical implications of political thought.

3. Develop the capacity to probe questions of philosophical methodology, that is, various forms of logic and dialectic in the history of Philosophy, and the role of mathematical thought in Philosophy.
4. Develop the capacity for production and critique of knowledge production and practice in the various fields and disciplines of the Arts, Humanities, Social Sciences, and STEM.

All Habib University students (class of 2024 onwards), except those majoring in the CH program, are eligible to declare and pursue the Philosophy Minor.

11.5.2. Requirements for the Philosophy Minor (Class of 2029)

Courses	Credit Hours	No. of Courses
Core Courses		
PHIL 200: What is Philosophy? **OR** PHIL 122 Introduction to Western Philosophy **OR** another course that satisfies the requirement	03-04	01
CORE 202 Hikma 1, **OR** CORE 111 Logical Problem-Solving **OR** CS 101 Algorithmic Problem Solving	03-04	01
Intermediate Course		
Course in Epistemology or Ontology ranging from 200 & above^ **OR** any other course satisfying the requirement.	03-04	01
Electives		
Any two advanced level (300 or 400 level) electives in PHIL.	06-08	02
Overall	**15-20**	**05**

* If both are taken as separate courses, one counts as an advanced level elective course.

- Students must take all the 05 courses as specified above to qualify for the Philosophy minor.
- Minimum 15 credits.
- Courses cleared with C minus / passing grade can go on the grid for Philosophy Minor.

^For further clarity, please note that intermediate level is broadly defined to include courses with codes ranging from 200 to 400, and which have sustained engagement with ontological and/or epistemological inquiry. Courses taught Fall 2019 onwards that satisfy the requirement include:

- PHIL 324 The Oneness of Being: The Creative Imagination of Ibn 'Arabi
- PHIL 325 Dream Interpretation: A Decolonial History
- PHIL 375 Philosophy in the Anthropocene
- PHIL/RELS 327 Spirituality, Philosophy and Science
- PHIL/LIT 311 Philosophy, Literature, and the Question of Virtue
- PHIL 326 Philosophical Hermeneutics
- HUM/PHIL 301 Comparative Hermeneutics of the Self
- PHIL/SDP 222 What is Power? Foucault, Biopolitics & Critical Thinking
- PHIL/ECON 421 Philosophy of Marx

Note: No single Habib Liberal Core course can count towards fulfilling requirements towards completion of more than one of CL, HIST, RELS, and PHIL minors.

11.6. Religious Studies Minor

Offered by: Comparative Humanities (CH) Program

The minor will feature a range of courses in comparative religion, theory and methods in the study of religion, textual analysis, and specialized topics in religious studies. The aim of the minor is to introduce students to multiple ways of approaching world religious traditions, and the ways in which these traditions have been shaped by historical, political, and social realities. Students will appreciate the plurality and richness of religious expression throughout history, and the modes in which religious traditions continuously interact. This makes Religious Studies compelling for both graduate school across the human and social sciences, as well as for employers across a range of sectors of the economy.

11.6.1. Learning Outcomes

1. Apply methods from several key disciplines in the social sciences and the humanities in the study of religion.
2. Question notions of 'mainstream' religion, religious essentialism, and the immutability of religious traditions and their underlying moral frameworks
3. Employ comparative approaches to understand the ways in which world religious traditions have influenced and shaped each other
4. Explore the interface between religious, institutions, texts, ideas, and practice
5. Critically reflect on the historical roots of contemporary conflicts that are popularly seen to be rooted in religious difference

All Habib University students (class of 2024 onwards), except those majoring in the CH program, are eligible to declare and pursue the Religious Studies Minor.

11.6.2. Requirements for the Religious Studies Minor (Class of 2029)

Courses	Credit Hours	No. of Courses
Core Courses		
RELS 102 Introduction to World Religions **OR** RELS/HIST 223 Making of Modern World Religions.	03-04	01
CORE 202 Hikma 1 – History of Islamic Thought	04	01
Intermediate Courses		
REL223: Comparative Approaches, Methods and Key Issues in the Study of Religion (Or any approved course that satisfies the requirement)	03-04	01
Electives		
Any two advanced level (300 or 400 level) electives in RELS.	06-08	02
Overall	**15-20**	**05**

- Students must take all the 05 courses (and complete a minimum of 15 credits) as specified to qualify for the Religious Studies Minor.
- CORE 302: Hikma II can be one of two electives provided the student is not already counting Hikma II for the second philosophical thought requirement in the Habib Liberal Core.
- Courses cleared with C minus / passing grade can go on the grid for Religious Studies Minor.

11.7. History Minor

Offered by: Comparative Humanities (CH) Program

History is regarded as an essential component of a liberal arts education. The aim of the minor is to awaken the student's curiosity about how the past shapes our present and to nurture the critical thinking, research, and writing skills that are essential for historical study. The minor will teach students to identify, understand and critically analyze historical change and difference, as well as the legacies, conscious or unconscious, that each generation inherits from its past, and the many perspectives and relations one can have vis-à-vis those legacies. The cognitive qualities of complexity, rigor, ability to recognize contingency and imagine alternatives, as well as, sensitivity to change and transformation in the midst of continuity make historical study attractive both for graduate school across the human and social sciences, as well as for employers across a range of sectors of the economy.

11.7.1. Learning Outcomes

1. Appreciate the interconnectedness of histories of various parts of the world.
2. Critically analyze the historically crucial role of conceptual and discursive shifts and transformations across historical mentalities and spaces.
3. Conduct historical research and craft arguments that resonate with diverse audiences
4. Navigate historiographical debates, historical methodologies and interpretive frameworks

All Habib University students, except those majoring in the CH program, are eligible to declare and pursue the History minor.

11.7.2. Requirements for the History Minor (Class of 2029)

Courses	Credit Hours	No. of Courses
Core Courses		
Course in Global Histories such as HIST 332 History of Brazilian Independence (Global Histories) **OR** HIST 225: Latin American History **OR** HIST/SDP 190: (Global Histories) Military Regimes in South Asia and South America **OR** HIST 2xx: (Global Histories) Political Islam **OR** any other course approved by the Board of Faculty	03-04	01
Pakistan and Modern South Asia (PAMSA)	04	01
Intermediate Courses		
Course in Historical Methods, Historicity or Historiography: HIST 327: Understanding Histories: Historiography and Historical Methods **OR** another course approved by the Board of Faculty	03-04	01
Electives		
Any two advanced level (300 or 400 level) HIST electives.	06-08	02
Overall	**16-20**	**05**
- Students must take all the 05 courses as specified above and complete a minimum of 16 credits to qualify for the History minor.		

11.8. South Asian Music Minor

Offered by: Center for South Asian Music & Comparative Humanities (CH) Program

The minor in South Asian Music at Habib University will provide an opportunity for students to explore the field of Music and engage with their South Asian musical heritage through courses exploring the evolution and theoretical basis of South Asian music, contrasting them with other musical traditions and genres. The minor will offer courses that introduce basic musical theory, explore the scientific and mathematical frameworks of music, locate South Asian music in its historical and social contexts, and establish a foundation for pursuing advanced studies in music. Some courses for the minor will require students to learn a particular musical skill (instrumental, vocal or compositional). The practice component of the minor will be fulfilled by enrolling in music tutorials for three semesters.

11.8.1. Learning Outcomes

1. Recognize and distinguish between, various forms of musical performance *(e.g. dhrupad, khayal, thumri, kafi, kajri, dadra etc.)* and musical structures *(e.g. raags, taals, gats etc).*
2. Identify the properties of the twelve-tone scale and its usage in Western and South Asian music and apply techniques (both rhythmic and melodic) to generate rudimentary musical sounds.
3. Articulate the mathematics inherent to musical forms and the mathematics used to generate musical ideas
4. Accurately describe the social and historical contexts in which South Asian music has evolved and explain the global music context in which it currently stands.
5. Assess, ethnographically, the system of South Asian music, its practitioner communities and audience, and use it as a lens for understanding the historical and contemporary socio-political landscape of the region.

Students from all programs at Habib University can take the South Asian Music Minor.

11.8.2. Requirements for the South Asian Music Minor (Class of 2029)

Courses	Credit Hours	No. of Courses
Core Courses		
MUS 101 Music of South Asia: Styles and Structures	03	01
MATH 106 Music and Mathematics	03	01
MUS 222 Sound and Subjectivity	03	01
MUS 221 Humari Meeras: History and Discourse in South Asian Music	03	01
Elective in History, Theory or Practice		
One elective course in History, Theory or Practice approved by the CH program. The courses that currently qualify for such an elective are: • Introduction to Pakistani Film Music (LIT 121) • Breathing Bansuri (MUS 111) • Musicking: The Anthropology of Music (ANT 2XX) The Science of Sound	03	01

Courses	Credit Hours	No. of Courses
Other		
Three semesters of practicum in Music Lessons offered at the *Khawaja Mashooqullah Music Room*, offered through the Centre for South Asian Music. Students declaring a South Asian Music Minor will be required to get attestation from the Music Room Manager and the Center Director in their final semester at Habib and will receive a certificate of completion of the three-semester practicum from the Center for South Asian Music. This requirement is in addition to the requirement for Music Room enrolment for MUS 101 (a course requirement).		
Overall	**15**	**05**

- Students must take all the 05 courses (3 credits each) and 3 semesters of enrollment in the Music Room Lessons
- Minimum 15 credits.
- The student should have a C+ or higher grade in all the 5 courses plus 85% attendance in the Music Room lessons for the 3 semesters.
- * Students declaring a South Asian Music Minor will be required to get attestation from the Music Room Manager and the Center Director in their final semester at Habib and will receive a certificate of completion of the three-semester practicum from the Center for South Asian Music. This requirement is in addition to the requirement for Music Room enrolment for MUS 101 (a course requirement).

Note:

The student must meet at least two times a week for a 45-minute session with the instructor and must also carve out time for daily practice. Practicum is handled by the Center for South Asian Music.

11.10. Communication Minor

Offered by: Communication and Design (CND) Program

The Communication (COM) minor is based around a condensed curriculum in New Media Production and Media Studies. Theory and practice are twinned in this minor, and the required courses will provide students with foundational to intermediate skills in media production, along with a proficient understanding of the global aesthetics of cultural production, with the aim to eventually apply this knowledge to the local context. Students will be able to use the two required electives to delve a little deeper into the kind of production they want to practice, or take more seminar courses in media studies and history if their interests lie in examining the impact of cultural production on society.

11.10.1. Learning Outcomes

By taking this minor, students will be able to

1. Produce New Media artefacts aimed at knowledge creation, awareness generation and social change, among others
2. Engage in creative and divergent thinking to approach content creation in innovative ways
3. Demonstrate a capacity to think beyond disciplinary epistemes when considering the role of media in modern society

Habib University Students from all majors except those majoring in CND program can pursue the minor.

11.10.2. Requirements for the Communication Minor (Class of 2029)

Courses	Credit Hours	No. of Courses
Required Courses		
CND 103 Inro to Design and Media	04+01	01
COM 201 Production Fundamentals	04+01	01
COM 204 Elements of Aesthetics I	03	01
Elective Courses		
100/200 level COM elective	03/04	01
300/400 level COM elective	03/04	01
Overall	**18-20**	**05**

- Minimum Grade: C minus / HU passing grade in all courses for the minor
- Double counting is not allowed
- Transfer of credits is allowed only with the approval of the program

11.11. Design Minor

Offered by: Communication and Design (CND) Program

This research and participatory design centered minor aims to provide students of other programs with foundational-to-intermediate skills and methodologies in human centered design. Students will be required to take both studio and seminar courses in order to complete this minor, and can expect to spend their time in these courses learning how to understand peoples' needs and respond to them with appropriate and innovative interventions.

11.11.1. Learning Outcomes

By taking this minor, students will be able to

1. Conduct research on local communities along the principles of human centered design to achieve an empathetic and holistic understanding of their needs
2. Engage in creative and divergent thinking to approach problems in innovative ways
3. Develop interventions in the form of products or services in order to bring about meaningful societal change

Habib University Students from all majors except those majoring in CND program can pursue the minor.

11.11.2. Requirements for the Design Minor (Class of 2029)

Courses	Credit Hours	No. of Courses
Required Courses		
CND 103 Inro to Design and Media	04+01	01
DES 203: Designing for and with People	04+01	01
DES 302: Design for Social Change **OR** DES 204: Research in Design	02	01
Elective Courses		
100/200 level DES elective	03/04	01
300/400 level DES elective	03/04	01
Overall	**18-20**	**05**

- Minimum Grade: C minus / HU passing grade in all courses for the minor
- Double counting is not allowed
- Transfer of credits is allowed only with the approval of the program

11.13. Social Development and Policy Minor

Offered by: Social Development and Policy (SDP) Program

Students from all majors except those majoring in SDP can pursue the SDP minor.

11.13.1. Requirements for the Social Development & Policy Minor (Class of 2029)

Courses	No. Of Courses	Credit Hours
Required Courses		
SDP 101 Development and Social Change	01	04
SDP 201 Qualitative Research Methods **OR** SDP 202 Quantitative Research Methods	01	04
SDP 204 Public Policy 1	01	04
SDP Electives		
SDP Elective (any level)	01	03-04
Upper-level SDP Elective (300 or 400 level)	01	03-04
Overall	**05**	**18**

Minors Offered by Dhanani School of Science and Engineering

11.14. Physics Minor

Offered by: Integrated Sciences and Math (ISciM) Program

11.14.1. Learning Outcomes

The Physics minor is particularly an adequate choice for those students who wish to:

1. Broaden their understanding of the physical principles of the universe, explore their love for Physics, and develop critical thinking and quantitative reasoning skills.
2. Pursue a Physics graduate studies program by polishing and improving their concepts by taking courses such as Mechanics and Thermodynamics, Modern Physics, Electromagnetic theory, Quantum Mechanics, and another advanced elective.
3. Enhance their skills for interdisciplinary or multidisciplinary fields in their careers like Computational Physics, Space studies, Environmental studies to name a few. This minor improves their chances to compete in such disciplines with confidence and credence.

Students from all programs at Habib University can pursue the Physics Minor.

11.14.2. Requirements for the Physics Minor (Class of 2029)

Courses	Credit Hours	No. of Courses	Prerequisite(s)
Foundational Courses			
PHY 101 Mechanics and Thermodynamics	03	01	None
PHY 201 Modern Physics	03	01	PHY-101 Mechanics and Thermodynamics
PHY 202 Quantum Mechanics	03	01	PHY 201 Modern Physics PHY 101 Mechanics and Thermodynamics
PHY 241/EE 241 Electromagnetic Theory	03	01	MATH 202 Engineering Mathematics or equivalent
PHY 101L Mechanics Lab	01	01	-
PHY 102L Advanced Physics Lab	01	01	-
Electives			
Electives (300 or 400 level)	09 -12	03	
Overall	**23 (min)**	**09**	

- Students must take all the courses specified above to qualify for the Physics minor.
- Students must earn a minimum of 23 credits.
- Students must earn a C grade or higher in all Students must earn a C grade or higher in all *mandatory* courses (foundation courses) to continue with the minor.

Electives offered by the program that can fulfil the minor requirements:

- ME 342 Introduction to Nanotechnology
- PHY 300/CS 314 Quantum Computing
- PHY-301 Classical Mechanics
- PHY-302 Mathematical Methods for Physics (also valid for Mathematics Minor)
- PHY-351 Introduction to Statistical Mechanics
- PHY-401 Quantum Mechanics II
- PHY-441/EE-441 Antennas and Wave Propagation
- PHY-360/ME-302 Engineering Thermodynamics

Please note that the offering of electives is subjected to the availability of faculty and is contingent on the number of students enrolled. A minimum of seven (07) students is required to offer a course. In case fewer students enroll, individual study courses may be offered by the program subject to the availability of relevant faculty.

11.15. Mathematics Minor

Offered by: Integrated Sciences and Math (ISciM) Program

The mathematics minor at Habib University offers an opportunity to students from all disciplines with a significant interest in Mathematics to deepen their understanding of the subject. This optional field of study is designed to provide a foundation in Calculus, Linear Algebra and basic modelling techniques using differential equations. Convergent thinking is also developed through the analysis of quantitative problems directed towards the right procedure for the right outcomes. The choice of courses available within the minor allows the students to either take a pure mathematics track, an applied mathematics track, or a mix of the two. Hence, students are free to choose any elective course from either Pure Mathematics, Applied Mathematics, or both. Depending on the availability of faculty, a variety of courses are offered within each stream.

11.15.1. Learning Outcomes

1. Mastery of key mathematical concepts and techniques, including calculus, linear algebra, and abstract algebra.
2. Ability to use mathematical reasoning and problem-solving skills to analyze and interpret data and solve complex problems in a variety of fields.
3. Familiarity with the current state of knowledge and major research areas in mathematics, including an understanding of the application of mathematical concepts and techniques in fields such as science, engineering, economics, and computer science.

Students from all programs at Habib University can pursue the Mathematics Minor.

11.15.2. Requirements for the Mathematics Minor (Class of 2029)

Courses	Credit Hours	No. of Courses	Prerequisite(s)
Foundational Courses			
MATH 102 Calculus II	03	01	MATH 101 Calculus I
MATH 202 Engineering Mathematics	03	01	MATH 101 Calculus I
MATH 205 Linear Algebra	03	01	MATH 202 Engineering Mathematics
MATH 310/ EE 354 Probability and Statistics	03	01	None
Electives			
Electives	09 -12	03	
Overall	**20**	**07**	

- Students must take all the foundational courses specified above to qualify for the mathematics minor.
- Students are required to take at least two (out of 3) 300 or higher-level electives.
- Students must earn a minimum of 20 credits.
- Students must earn a C grade or higher in all the foundational courses to continue with the minor.

Note:

1. DSSE students have a mandatory requirement of MATH 101 but it cannot be double counted towards the minor.
2. SAHSS students can count MATH 101 towards the minor.
3. Students are free to choose electives either from Pure Mathematics or Applied Mathematics or both.
4. MATH 0xx level courses cannot be taken to satisfy the minor.
5. Depending on the availability of the faculty, a variety of courses can be offered within Pure and Applied Mathematics. Please check with the program at the start of the academic year for the latest list of elective offerings.
6. A minimum of seven (07) students is required to offer a course. In case fewer students enroll, individual study courses may be offered by the program subject to the availability of relevant faculty.

Electives offered by the program that can fulfil the minor requirements:

- MATH-101 Calculus I (Only for SAHSS students)
- MATH 104 History of Mathematics
- MATH-106 Music and Mathematics
- MATH-113/CS-113 Discrete Mathematics
- MATH 301 Vector Calculus
- PHY/MATH 302 Mathematical Methods for Physics
- MATH 303 Advanced Differential Equations
- MATH 304 Real Analysis
- MATH 305 Complex Analysis
- MATH-320/CS-326 Mathematics of Machine Learning
- MATH 333 A History of Number Theory
- MATH-413/CS-413 Graph Theory

11.16. Bioscience Minor

Offered by: Integrated Sciences and Math (ISciM) Program

The minor includes courses that build foundational knowledge in Biosciences and expose students to the breadth of sub-disciplines within Biosciences. Hands-on experience, being an integral part of the minor, has been enforced by requiring that students enroll in any companion labs of any taken courses. The structure of the minor further allows the enrolled students to either continue exploring the breadth of Biosciences or develop deeper into the depth of a particular sub-discipline, by offering a choice of courses from various sub-disciplines of Biosciences.

11.16.1. Learning Outcomes

1. Understanding of the fundamental concepts and principles of biology, including genetics, evolution, ecology, and biochemistry.
2. Ability to analyze and interpret data and experimental results in the context of biological research.
3. Familiarity with the current state of knowledge and major research areas in the field of biosciences, including an understanding of the ethical and societal implications of advancements in the field.

Students from all programs at Habib University can pursue the Bioscience Minor.

11.16.2. Requirements for the Bioscience Minor (Class of 2029)

Courses	Credit Hours	No. of Courses
Foundational Courses		
BIO 101 Cell Biology and Public Health (with lab)	03+01	01
BIO 211 Understanding the Human Body (with lab)	03+01	01
Electives		
Lower-level Elective (100- or 200- level)	06 – 08	02
Upper-level Elective (300 or 400 level)*	03 – 04	01
Overall	17-20	05

*Students must take at least (01) high-level elective course.

Lower-level electives: Students have to take two electives from the following list of 100/200 level courses.

- BIO 104 + BIO 104L Ecology & Evolutionary Biology with lab 3 + 1
- BIO 121 + BIO 121L Biochemistry with lab 3 + 1
- BIO 111 + BIO 111L Food and Nutrition with lab 3 + 1
- BIO 102 + BIO 102L The Secret World of Microbes with lab 3 + 1
- BIO 152 Bioscience in Cinema: Myths and Reality 3
- BIO 114 + BIO 114 Biodiversity in the City with lab 3 + 1

Higher level Elective Courses: Students have to take one (01) elective course at the 300 or higher level. The pre-requisite for all these courses would be the completion of the two (02) foundational courses.

• BIO 301	Global Health and Disease**	3 + 0
• 3xx/4xx	Population and Community Ecology	3 + 0
• 3xx/4xx	Genetics	3 + 0
• 3xx/4xx	Bioinformatics	3 + 0
• 3xx/4xx	Cancer, Infectious diseases and Immunology	3 + 0
• 3xx/4xx	Independent Study– Research Projects in Biosciences	3 + 0

11.17. Computer Science Minor

Offered by: Computer Science Program

Habib University students from all majors, except for those majoring CS are eligible for the CS minor. Students can double count at most 4 required courses or program electives to fulfill their CS minor requirements.

11.17.1. Requirements for the Computer Science Minor (Class of 2029)

Courses	Credit Hours	No. of Courses
CS Foundation		
CS 101 Algorithmic Problem Solving	3+1	01
CS 113 Discrete Mathematics	3+0	01
CS 201 Data Structures and Algorithms	3+1	01
CS Kernel Any two 200 or higher-level courses from the CS Kernel (CS Kernel courses cover concepts, skills and techniques that are fundamental to the pursuit of most disciplines and practices within CS)		
CS Kernel Courses include: • CS 201 Data Structures II • CS 212 Nature of Computation • CS 224 Object Oriented Programming and Design Methodologies • CS 232 Operating Systems • CS 353 Software Engineering • CS 355 Database Systems • CS 412 Algorithms: Design and Analysis • CS 351 Artificial Intelligence	03-04	02
Upper-level CS Electives		
Two CS courses (200 level or higher)	06-08	02
Overall	**21 (min)**	**07**

- Students must take all the 07 courses as specified above to qualify for the Computer Science minor.
- Students pursuing a minor are advised to consult the CS program director regarding the choice of courses taken in fulfilment of the minor.
- A minimum grade of C+ is required for all courses.
- Before enrolling in any course for the CS minor, the student must have obtained a passing grade in the respective prerequisite course
- CS Electives: Any CS elective with CS 2xx, CS 3xx, and CS 4xx course numbers will qualify. Also, courses (300 level and above) offered by other programs that are approved, can be counted as CS electives that can be taken. These CS Electives can be either 3 or 4 credit hour courses.

11.18. Electrical and Computer Engineering (ECE) Minor

Offered by: Electrical and Computer Engineering Program

The increasingly blurring boundaries between various disciplines in the present world have placed students interested in multiple areas in the difficult position of choosing between those areas. The minor in ECE provides an opportunity to students enrolled in other programs at HU to be exposed to the extensive breadth of ECE discipline areas, without a substantial investment of time on their part. The minor has been designed such that the students have reasonable academic preparation in terms of the foundations of ECE, but then have the option to create their own path through the different concentrations within ECE, including Communications, Power and Energy, Signal Processing, Control and Robotics, Analog Circuits, Digital Circuits, Electromagnetics, and Embedded Systems.

11.18.1. Learning Outcomes

A student successfully completing the minor requirements will be able to:

1. Construct circuits and test them in the laboratory using basic test equipment or simulation tools, with intermediate level of proficiency;
2. Analyze the behavior of electric circuits and systems, and reach substantiated conclusions using mathematical techniques;
3. Design ECE systems, components or processes that meet specified needs at beginner level of proficiency;
4. Either apply knowledge from one technical discipline within ECE, or comprehend knowledge from a few technical disciplines within ECE.

Habib University students from all majors except those majoring in EE & CE are eligible for the ECE Minor. The ECE minor requires successful completion of a minimum of 22 credit hours of coursework and seven (7) courses as described in the table

11.18.2. Requirements for the Electrical & Computer Engineering Minor (Class of 2029)

Courses	Credit Hours	No. of Courses	Prerequisite(s)/ Corequisite(s)
ECE Foundation			
EE 100/CE 100 Introduction to Electrical and Computer Engineering[1]	0+2	01	CS 101; EE 112/CE 112
EE 112/CE 112 Electric Circuits – I[2]	2+0	01	EE/CE 100
ENGR 291 Engineering Workshop	0+1	01	None
ECE Concentration Foundation Any one of the following courses			
EE/CE 213/211 + EE/CE 213L/211L Basic Electronics	3+1	01	EE 112/CE 112
EE/CE 172/222 + EE/CE 172L/222L Digital Logic and Design	3+1		None
	3+1		EE 112/CE 112

Courses	Credit Hours	No. of Courses	Prerequisite(s)/ Corequisite(s)
EE-213[3] Electric Circuits – II + EE-113L[3] Electric Circuits – II Lab			MATH 101 Calculus I
EE/CE 252/251 + EE/CE 252L/251L Signals and Systems	3+1		MATH 101 Calculus I
Additional ECE Courses (Electives)			
Two ECE courses (300 level or higher)	06-08	02	
One ECE course (any level)	03-04	01	
Overall	**18-21**	**07**	

- A minimum grade of C+ is required for all three foundation & one Concentration Foundation courses.
- Only one out of two 300 level courses can also be counted towards student's major.
- Up to three courses can be counted towards both the student's major and the ECE minor.
- The exact number of credit hours will depend on the nature of electives courses i.e., courses with/without a lab component. It may be noted that in case electives are being offered with labs then the course has to be taken with the lab.

Equivalent courses prior to Fall 2022:

[1]EE 101 – Introduction to Electrical & Computer Engineering (2-2 credit hours)

[2]EE 111 – Electric Circuit Analysis (3-1 credit hours)

[3]EE 212 – Electric Network Analysis (3-1 credit hours)