

# **COURSE** **CATALOG**



**Habib University**  

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shaping futures



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# 2014 - 15 Academic Calendar

## FALL SEMESTER 2014

Faculty Return	August 3
First year orientation begins August 18 <sup>th</sup> to the 20 <sup>th</sup>	
First Day of Class	August 25
Add/Drop Period	August 25-September 5
Eid-ul-Adha	October 6-10
Ashura	November 3-4
Iqbal Day	November 9
Last Official Day of Class	December 4
Reading Days	December 5-7
Exam Week	December 8-13
Winter Break Begins	December 15
Final Grades Due	December 16
Quaid-e-Azam Day/Christmas	December 25

## SPRING SEMESTER 2015

Faculty Return	January 7
First Day of Classes	January 12
Add/Drop Period	January 12-19
Kashmir Day	February 5
Spring Break	March 9-13
Pakistan Day	March 23
Labor Day	May 1
Last Official Day of Class	April 29
Reading Days	April 30-May 2
Exam Week	May 4-9
Summer Break Begins	May 11
Final Grades Due	May 12
Faculty In-Service	May 13-29

## SUMMER SESSION 2015

First Day of Classes	May 25
Add/Drop Period	May 25-27
Ramadan Begins	June 18
Last Official Day of Class	July 9
Reading Days	July 10-12
End of Semester Exams	July 13-14
End of Academic Year Break	July 15
Final Grades Due	July 15
Eid-ul-Fitr	July 17

# WELCOME



**Wasif Rizvi**  
President, Habib University

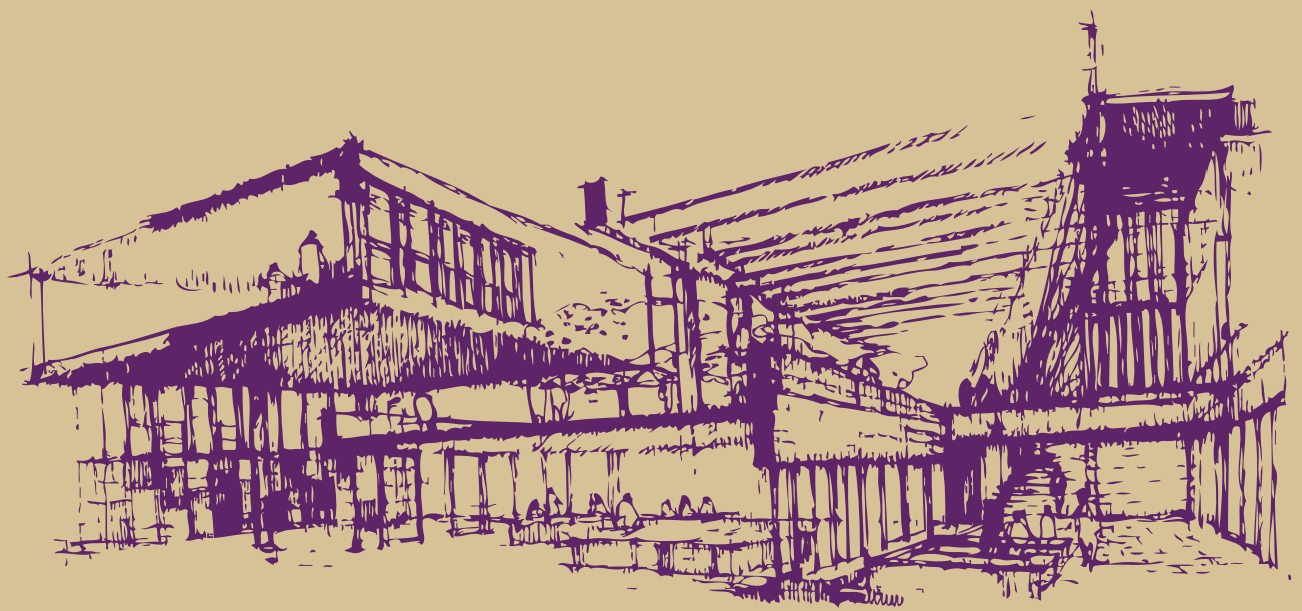
## Welcome to Habib University!

You are part of something that will never be repeated again. You are a distinguished member of the founding class of Habib University. You are a pioneer, a co-founder, and a co-creator of Habib University. Indeed, you are a crucial partner in this remarkable, game-changing journey. With this distinction you will have the privilege to shape so many aspects of this institution. You will lead the charge in defining student life. You will contribute to creating codes of ethics for Habib University's community. Your creative energy will define the unique culture and experience of our institution. I can assure you that your next years here will be a transformative experience. You will enter as young adults on the cusp of discovering themselves and will leave as critically conscious and intellectually astute citizens. Habib University is committed to nurturing you to be a leader in everything you undertake. Equally importantly we hope that Habib University enables you to be robustly engaged citizen who will help serve their wider community using creative and innovative methods of learning and action.

At Habib University you will have access to highly distinguished faculty, cutting edge research laboratories, and a great richness of academic and recreational resources all within one of the greatest state-of-the-art university campuses in the region. You can proudly proclaim to your family and friends that you are on a campus which is as good as any in the world. Moreover our curriculum is innovative, flexible and interdisciplinary in approach and comparable to any of the great knowledge centers of the world.

At Habib University you will be an important part of a diverse student body establishing examples of tolerance and pluralism in your community. As a founding student you are a key custodian of our motto, Yohsin. A profound concept, Yohsin measures the worth of a person not only in terms of their excellence but also their creativity, passion, respect, and service they bring to society.

So welcome! Come, stay awhile. Make Habib University your home for the coming four years. You won't find a more supportive environment anywhere else. You will encounter challenges you have not experienced before, but you will be surrounded by talented, caring professors and students ready to treat you like a member of their family and provide you with whatever you need to cultivate yourself. I am confident that as a co-founder you will make Habib University a great institution for you and others to succeed and thrive. Congratulations on making such a great choice. Go Habib!



# Vision, Mission & Values

## Vision

Habib University is envisioned to be a preeminent institution of higher learning, dedicated to enriching individual lives and engaging society through teaching, research and service.

## Mission

Our mission is to:

Educate promising students from all backgrounds and enable them to become competent, caring and critically-conscious members of society.

Engage outstanding academics with a passion for teaching, who will work with us to enrich the minds and lives of our students and contribute positively to the larger community.

Promote creativity, academic freedom and exchange of ideas in an intellectually stimulating environment of mutual respect and collaboration.

## Philosophy

قِيَمَةُ كُلِّ امْرِئٍ مَا يُحْسِنُهُ

EVERY HUMAN BEING'S WORTH IS IN THEIR  
Y O H S I N  
EXCELLENCE . PASSION . RESPECT . BEAUTY . SERVICE

Habib University will provide an indigenous liberal arts education that has, at its heart, the philosophy of yohsin: a striving for excellence, an appreciation of beauty, passion balanced by awareness of consequences, respect for others and a desire to serve the communities in which we are living in.

A multidimensional concept, yohsin encompasses a world-view where the worth of a person is measured not just in terms of their technical knowledge or skills but by their interaction with nature and society at large. This involves living in a responsible way and positively impacting the community and the world.

## Patron

House of Habib

Leading Pakistani business group with a rich tradition in philanthropy, finance and commerce

## About

A first-of-its-kind liberal arts & sciences university in Pakistan starting classes in the fall of 2014

## Infrastructure & Awards

State-of-the-art Learning Facilities, Indoor and Outdoor Recreational Spaces

Open access to all through ramps and elevators located throughout the campus

Internationally acclaimed campus design from Society for College and University Planning (SCUP)

Built on 6.3 acres of land with a covered area of 476,000 square feet

## Academics

Habib University's flagship three-year Liberal Core curriculum that introduces all undergraduate students to the arts, humanities and social sciences

Small class sizes will enable significant faculty-student interaction and encourage students to collaborate with faculty on research projects

Student-Faculty Ratio: 12:1

4 undergraduate degrees

- Computer Science
- Electrical Engineering
- Social Development & Policy
- Communication Studies & Design

# ABOUT HABIB UNIVERSITY

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There are several reasons that make Habib University a unique learning space.

Habib University's **liberal arts & 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 much more, Habib University's **purpose-built campus** provides students plenty of opportunities to maximize their potential. Our wi-fi enabled campus is entirely accessible and encourages learning and interaction both within and beyond the classroom.

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.

Habib University is a truly **global institution**. We have connected with renowned international universities and organizations from around the world

to enhance our intellectual richness and bring invaluable institutional knowledge to our fold. Among others, our collaboration network includes Carnegie Mellon University, USA and Texas A&M University, Qatar.



# HABIB UNIVERSITY POLICIES

## ACADEMIC RIGHTS AND RESPONSIBILITIES

Habib University is a community of learners founded on the free and respectful exchange of ideas. Neither students nor faculty should be disadvantaged on the basis of 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 instructor, academic advisor, or degree committee. Classroom assignments and course/degree requirements should be completed as prescribed in order to allow faculty sufficient 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 Habib University Code of Conduct and Honor Code. Academic dishonesty includes, but is not limited to, cheating, plagiarism, and collusion.

Faculty shall evaluate student performance based upon the expectations and actual content of the class, lab, or other course of study as defined by the faculty member at the outset of the course. Any student who feels that he or she has received a capricious or arbitrary grade can appeal said grade as defined elsewhere in this document.

## UNIVERSITY STATEMENT OF ANTI-DISCRIMINATION

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 Student Affairs is responsible for coordinating the University's adherence to this policy and for complaint procedures in regard to discrimination or harassment.



## ACADEMIC ADVISING

Academic Advising is a central element of the undergraduate experience at Habib University. It is intended to be a collaborative relationship between student and advisor through which students create educational plans consistent with their personal, academic, and career goals. Every student entering Habib will be assigned an academic advisor. Should any student wish to change his or her advisor during their academic career, they can do so through their assigned advisor and the Office of the Director of Academic Systems.

## DECLARATION OF A MAJOR

All students entering Habib University must choose a School and major before beginning their course of study. At the end of their freshman year, students must confirm their major by filing a Declaration of Major form with the Registrar. Confirmation of major requires satisfactory performance in the area of study and the fulfillment of any requirements set forth by the respective programs.

## DECLARATION OF A MINOR

The Minor provides students at Habib University the opportunity to pursue an area of secondary specialization. It shall consist of a smaller set of classes within a well-defined area as determined either by the awarding program or in consultation with the student's academic advisor and appropriate school Dean. Students interested in completing a Minor must declare their choice no later than the middle of their fourth semester by filing a Declaration of Minor form with the Registrar. If the declared minor does not fit any existing program minor, the student must submit, along with his/her form, a Minor Academic Plan approved by the appropriate school Dean(s).

## TRANSFERS

All transfers, including transfer of credits, will be subject to review by the relevant Dean(s), and will take place on a case-by-case basis. All incoming students, regardless of their transfer status, must complete the Liberal Core before graduation. Students may transfer out from Habib University at any time. Students are advised to begin the transfer process well in advance of the termination of the academic year.

## GRADING SCALE

Letter Grade	Scale
A	4.00
A-	3.67
B+	3.33
B	3.00
B-	2.67
C+	2.33
C	2.00
C-	1.67
D+	1.33
D	1.00
F	0.00
W	Withdrawal
WP	Withdrawal Passing
WF	Withdrawal Failing
I	Incomplete

## INCOMPLETE POLICY

Students are expected to complete all courses during the academic semester in which the course was taken. If a student is unable to complete a course for reasons beyond his or her control, and the work completed to date is of passing quality, a grade of I (incomplete) may be given with instructor permission providing the grade of incomplete gives no undue advantage to that student. Incomplete grades should only be awarded with approval from the Dean of the School and with a completed Incomplete Agreement form, which must include all necessary details to satisfy the requirements of the course. Students must complete all work by the date specified in the Incomplete Agreement, which shall in any event be no later than the end of the following academic semester. The instructor must record the permanent grade by the last day of the examination period of that following semester or the "I" will default to "F." Incomplete grades are not calculated into a student's grade point average.

## COURSE LETTERING AND NUMBERING

All courses are designated first by a four-letter code that is meant to note the program in which the course originates. That four-letter code is followed by a three number sequence to denote the level. Levels are designated as follows:

000 – Pre-university and/or noncredit courses offered by the University. This may include some transitional courses.

100 – Freshman level or those courses generally taken in the first year

200 – Sophomore level or those courses generally taken in the second year

300 – Junior level or those courses generally taken in the third year

400 – Senior level or those courses generally taken in the final year of study.

In general, the course level dictates the point at which a student should take a particular course within the sequence of requirements. However, students are encouraged to check all of the course prerequisites to ensure their eligibility to enroll.

## REPEAT POLICY

Freshman and sophomore level courses outside of a student's major may be attempted no more than three times. The highest earned attempt is counted towards the GPA.

Courses within the student's major and those characterized as juniors and senior level courses may only be attempted a maximum of two times. The highest earned attempt is counted in the GPA.

A course repeat fee may be applicable to any repeated course.

### AUDITING A COURSE

Auditing means taking a class without the benefit of grade or credit. One audits a course for the purposes of self-enrichment and academic exploration.

An audited course will appear on the transcript with an "Au" (audit) grade. An audited course does not earn credit, is not included in the calculation of GPA, and does not count toward the minimum course load

required for continuous enrollment. Nonetheless, auditors are expected to attend classes regularly. Students registering a course for credit have priority over auditors, and auditing a course will be allowed only if space is available. Even during the add/drop period, an auditor may be asked to drop the course another student wants to add it for credit.

Audit courses do not fulfill degree requirements, but the credit value of audited courses is 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 an auditor may or may not be required to participate in the audited course is determined by the instructor prior to enrollment. For example, it is up to the instructor – and only the instructor – to decide whether an auditor will be allowed to take exams or if the auditor's work is to be submitted and/or evaluated. Students choosing to audit a laboratory course will be required to pay an additional lab fee.

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

The process for registering to audit a course is similar to that of registering a course for credit, with the following additional requirements:

- The student wishing to audit a course must obtain approvals from the course instructor, academic advisor, and Dean of the School in which the course is offered.
- For courses with a laboratory component, approval from the lab instructor must also be obtained.
- The School that offers the course may have additional requirements for auditors. Students need to contact the relevant Dean's office for information about these requirements.

Students on financial aid should bear in mind that the fee for auditing a course will 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 Financial Aid office.

## STUDENT CLASSIFICATION

Number of Earned Credits	Classification
0 – 39	Freshman
40 – 79	Sophomore
80 – 119	Junior
120 and Above	Senior

## ACADEMIC STANDING, PROBATION AND DISMISSAL POLICIES

*Good Academic Standing:* A student must maintain a CGPA of 2.33 throughout his/her academic tenure. Individual programs may set higher requirements. See program guides for details.

*Academic Warning:* If at any time during the academic life of a student his/her CGPA falls below 2.33, or the GPA in any one semester falls below 2.33, then the student shall be put on Academic Warning during the following semester. Any student on Academic Warning must meet with his/her academic advisor, who will help to design an Academic Success Plan for the following semester. If the student brings his/her CGPA and SGPA to 2.33 by the end of the semester, the student shall be restored to Good Academic Standing.

*Academic Probation:* If a student is unable to improve his/her CGPA sufficiently by the end of the Academic Warning period, he/she shall be placed on Academic Probation for one additional semester. Once Academic Probation has been assigned, the student must meet with his/her advisor – and a representative of the Student Affairs Office, as needed – to revise the Academic Success Plan before being allowed to continue. During the probation period, the student should expect close academic supervision and must meet with his/her advisor at least bi-weekly, or as defined in the Academic Success Plan.

*Academic Suspension:* A student who fails to bring up his/her CGPA in two semesters, as outlined above, will have his/her privilege to enroll revoked for one full academic semester (not including the summer semester). The student who chooses to return following an academic suspension must file a new Academic Success Plan and shall have only one semester to improve his/her CGPA.

*Academic Dismissal:* A student who, after the above remedies, has not been successful in raising his/her CGPA above the University minimum will be academically dismissed from the University.

All Suspensions and Dismissals become a permanent part of a student's academic record and as such are noted on the student's transcript. Academic Probation and Final Warning will likewise be noted

accordingly.

## REINSTATEMENT FOLLOWING SUSPENSION

A student who has been suspended from Habib University for academic or disciplinary reasons can be reinstated if and when the conditions for reinstatement as defined in the terms of suspension have been met. A student must file a formal request following the procedure outlined below:

### *Disciplinary Suspension:*

- Complete Application for Reinstatement;
- Submit an essay in which the student reflects upon the behavior that resulted in his or her suspension. This essay should demonstrate what the student has learned through his/her experience, how he/she has worked to correct the behavior, and what contributions he/she is prepared to make to the betterment of the Habib University community as a whole;
- Meet with the Chief Student Affairs Officer or his/her designee prior to reinstatement;
- Fulfill any other requirement as determined by the chief Student Affairs officer, or his/her designee.

### *Academic Suspension:*

- Meet with his/her academic advisor and collaborate in devising an Academic Success Plan for the first returning semester at minimum;
- Meet with his/her academic or other agreed upon advisor bi-weekly, or as determined by the academic plan, during the first return semester;
- Maintain a current GPA of at least 2.7 for the duration of the academic plan;
- Fulfill any other requirement as defined in the academic plan.

## GRADE POINT AVERAGE (GPA)

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

- Current or Semester GPA – GPA for the current semester only
- Cumulative (CGPA or Cum) – A cumulative GPA for the duration of the students' enrollment.

In addition GPAs might be calculated for a school, a program, concentration, or a major. However, these specialized GPAs will not appear on a transcript.

### *CALCULATING YOUR GPA*

The mathematical formula for calculating a student GPA is dividing the Total Quality Points by the Total Attempted Credits. Quality points are derived by multiplying credits for the individual course by the scale for the grade earned in the course, as listed in the official Grading Scale of the University. The formula is the same whether calculating current or cumulative GPA.

## ATTENDANCE POLICY

It is important for overall success that students are present and engaged in each and every one of their class meetings and outside of class assignments regardless of course level. However, an attendance policy has been enacted for all Freshman and Sophomore level students to ensure student success for this particular group of students. With very few exceptions, there will be no distinction between excused and unexcused absences. Attendance will be taken and absences noted in all classes. Freshman and Sophomore students must maintain at least 85% attendance for each class in which they are registered. Non-compliance with minimum attendance requirements will result in automatic failure of the course and may require the student to repeat the course when next offered. Additional fees may be required at the discretion of the Office of the President.

This policy is at a minimum. Departments, Schools, and individual faculty members may alter this policy to include stronger attendance requirements and/or implement them for all levels of students.

Exceptions to this policy will only be made on appeal to the University Appeals Committee (UAC) and will only be heard on the grounds to be outlined by the committee.

## WITHDRAWALS

Occasionally, it may be necessary to withdraw a student from one or more of his/her classes. This should never be seen as a way of avoiding poor grades. It should be used only when, in consultation with your advisor, there is no other alternative. Students are responsible for ensuring all forms are filled out and that they are actually withdrawn accordingly.

### *SELF WITHDRAWAL*

Students will be allowed to withdraw from an individual course up until the last class meeting of the semester. S/he may withdraw from the University in its entirety up until the last business day before final exams begin.

### *ADMINISTRATIVE WITHDRAWAL*

On rare occasions, Habib University reserves the right to administratively withdraw a student from his/her classes, either voluntarily or non-voluntarily.

Voluntarily, this option is available to students in severe emergencies such as a personal illness or an emergency in their immediate family. A student may choose to use this service only once during the duration of their tenure at the University. The student should notify the chief Student Affairs officer in writing within 30 days of the event leading up to the request and be prepared to submit documentation accordingly.

The University may at any time decide to administratively withdraw a student if officials find such action is needed to maintain a campus environment that is conducive to its educational purpose, to maintain order, and/or to protect the rights and safety of all of its community members. To this end, officials may order the involuntary withdrawal of a student from the University and/or from its residence facilities in accordance with institutional policy, as described herein.

### *SCOPE OF THE POLICY*

For the purpose of this and/or any other disciplinary policy, a student shall be defined as any person accepted in or enrolled in any educational course either full or part-time, credit or non-credit, or any person whose educational record reflects a continued relationship with the University. This policy will cover behaviors as described herein and that occur on University premises or at University or organizationally sponsored activities, but it also may address off-campus behavior if the University determines that the behavior has otherwise damaged the University, its property, or that of another community member irreparably; likewise, if the continued presence of the student is seen to impair, obstruct, interfere with or adversely affect the mission, process, or functions of the institution; or if they engage or threaten to engage in behavior that poses a danger or physical harm to self or others at any time they are to be considered a student.

### *PROCEDURES UNDER THIS POLICY*

This policy should not be seen as a substitute for appropriate disciplinary action as outlined in the Code of Conduct and procedures herein may run concurrent with those processes. This procedure may be implemented at any time, in consultation with other senior administrators, if the chief Student Affairs officer deems it necessary to do so.

Upon receiving a referral or report of an issue involving a student that could fit under this policy, the chief Student Affairs officer or his/her designee will conduct a review of the information provided within and proceed accordingly. If warranted s/he may ask for an immediate meeting with the student. Upon review, the

appointed official may take one or more of the following actions in accordance with their findings:

- Determine that the guidelines have not been met for involuntary review and terminate the process entirely;
- Determine that the guidelines have not been met and refer the case to the student conduct process;
- Require that the student schedule an evaluation by a qualified, licensed, mental health professional outside of the University at the student's cost;
- Invoke an interim suspension pending further investigation and/or the outcome of a student conduct case;
- Impose additional requirements on the student that must be met in order to continue enrollment;
- Allow a student who meets the conditions herein to voluntarily withdraw from the University and waive the right to further procedures under this policy and his/her privilege to enroll in the University again;
- Proceed with an immediate administrative withdrawal.

#### *STUDENT'S FAILURE TO COMPLY*

A student may be immediately, involuntarily withdrawn and/or disciplined under the policy and forfeits their right to appeal if he/she fails to:

- Attend any required meeting;
- Schedule and/or appear for any directives as associated with this process;
- Fails to adhere to any conditions placed on his/her continued privilege to enroll in the institution.

#### *INTERIM WITHDRAWAL*

Until a particular case of alleged misconduct has reached a final decision, the student shall retain his/her status and privilege to attend classes, use campus facilities and otherwise be present on campus. As an exception to this, in cases when in the view of the chief Student Affairs officer a threat to the teaching/learning environment at the University, the safety of community members, or to ensure protection of University property, the University may decide to invoke an interim withdrawal of these privileges. When in the opinion of the University an interim withdrawal/suspension is to be imposed, notification to the student may come in either verbal or written form. Within 3 business days of an interim action, a student should be notified in writing of the allegations against him/her. Further s/he should be given the opportunity to resolve the issue, either formally or informally, within ten business days according to the policies and procedures contained herein or in any other University publication.

#### *APPEALS*

A student may appeal an involuntary withdrawal using the same procedures as outlined in the student conduct process and the grievance policy.

#### *FAMILY EMERGENCY AND MEDICAL WITHDRAWAL*

On rare occasion, a student may have an emergency in the family or a medical reason that prevents them from completing a term. A student or his/her family should notify the Office of Student Affairs as soon as possible to request a Family Emergency or a Medical Withdrawal. It may be asked that proper documentation be submitted along with an appropriate form.

Likewise, and in very special circumstances, the University may grant a retroactive Family Emergency or Medical Withdrawal in cases where the onset of the issue at hand was sudden and/or the student or family were unable to notify the University accordingly. In such cases, a written request clearly stating the reasons and documentation accordingly should be submitted as soon as possible to the Office of Student Affairs and/or the Registrar.

Appropriate documentation for a withdrawal in this category consists of a letter from your attending provider that specifies the following:

- Date of onset of illness or other issue;
- Dates under professional care;
- General nature of the medical condition or other issue and why/how it prevented the student from completing his/her coursework;
- Date the student was last able to attend school;
- Date of anticipated return to school.

## GRADING AFTER WITHDRAWAL

All withdrawals completed after the add/drop period, usually the second week of classes, will be noted on the transcript. After the add/drop period, withdrawal forms will be with the Registrar and must be turned in signed by the student's academic advisor and the individual faculty member(s). Classes dropped while passing will be noted as "WP," while classes dropped while failing will be noted as "WF." WP and WF grades are not calculated in the overall GPA.

A student withdrawing overall from the University will be allowed to do so up until the last business day prior to the last week of classes of any given semester. When withdrawing fully at any time, including medical and emergency withdrawals, all classes will be graded with a "W."

## REFUNDS OF TUITION AND FEES PAID AFTER WITHDRAWAL

Regardless of reason, unless otherwise approved by the CFO, students withdrawing during the initial week of classes will be entitled to a full credit to their account minus applicable fees. Students who drop during the second week of classes but before the 10th class day will be entitled to a 75 percent credit. Students dropping after the 10th class day but before the end of the first month will be entitled to a 50 percent credit. No credit will be given after the first month of classes.

## LEAVE OF ABSENCE

A leave of absence will be available under special circumstances. A leave of absence is necessary if a student will not taking classes for more than one regular semester. It is good for one academic year and may be renewed only one time. Failure to file for a leave absence will result in loss of active student status, and readmission will be required. To properly file for a leave of absence, a form will be available from the Registrar's office and must be signed by the academic advisor, and the Dean of the School in which s/he is majoring. In the event the student is still undeclared, the chief Student Affairs officer will sign in place of the Dean.

Students who do not file a Leave of Absence form and have an absence of more than one semester will be moved from the status of a current student and must go through a reapplication process, including paying any applicable fees.

## UNIVERSITY RECORDS POLICY

### INTRODUCTION

Habib University maintains student educational records and ensures students' 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.

### DEFINITIONS

For the purpose of these guidelines, the terms used herein are defined as follows.

Student – any person who has been admitted to the University.

Education record – any record, document or material maintained by the University (either directly or through a third party) that contain 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 school 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 that are maintained after the person is no longer a student, such as Alumni records;

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

University official – an individual employed by the University in an administrative, supervisory, academic, research or support staff position; a member of the board of Trustees; 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 official University committee, such as disciplinary committee, or assisting a University official in the performance of his/her 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 task, service, or function.



Disclosure – to permit access to or to release, transfer or communicate student’s education record, or personally identifiable information contained in those records.

### *PROCEDURE TO INSPECT AND REVIEW*

A currently or formerly enrolled student may inspect his/her education records by making a written request to the Office of the Registrar. The request must precisely identify, as much as possible, the record or records that he/she may wish to inspect. On receipt of application, arrangements will be made for inspection within reasonable amount of time (within a maximum of 45 days). In case a particular record contains information about more than one student, said student’s access will be restricted to information that relates to him/her.

### *REFUSAL/DENIAL OF REQUEST FOR INSPECTION AND REVIEW*

A student’s request for inspection and review of the following records may be refused:

- The financial statement of the student’s parents;
- Confidential letters and letters of recommendations for which the student waived the right to access in writing;
- Records excluded from the definition of “education records” in this policy.

A student’s request for access to records may also be denied due to one or more of the following reasons:

- The student has not cleared all financial obligations to the University;
- There is a pending disciplinary case against the student;
- The authenticity of the academic records or transcripts is in question.

### *DISCLOSURE TO PARENTS*

The University requires written consent of the student to release his/her education records to his/her parents. The University does not require a student’s consent to disclose information related to the student’s violation of local or federal laws, or the policies of the University, or if there is any disciplinary action against said student.

### *DISCLOSURE TO THIRD PARTY*

In general the University does not disclose information to any third party without written consent from the student or unless covered in this policy. However, the University does not require written consent of the student to disclose personally identifiable information from a student’s education record under the following conditions:

The University Officials – where the University official has a legitimate educational interest in the student’s record

Official of another School – the information may be disclosed to another school where the students seeks or intends to enroll or is already enrolled.

Under Judicial Order – personally identifiable information may be release under the judicial order or lawfully issued subpoena.

In connection with 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.

Federal and Provincial authorities – if required by law

Accrediting and Professional Associations – personally identifiable information may be disclosed to designated officials or representatives of the accrediting and other professional organizations with which the University is affiliated to the extent necessary to fulfill the obligation of that accreditation or affiliation.

Delinquency of payment to the University – personally identifiable information may be released to agencies responsible for collection of financial obligations to the University in case of delinquency of payment by the student.

Litigation against the University – personally identifiable information may be released to the attorneys of the University as deemed necessary for the defense of the University against litigation initiated by the student.

Protect Health and Safety of a student - The University may disclose personally identifiable information from education records to appropriate parties including, but not limited to, parents of an eligible student, whose knowledge of the information is necessary to protect the health or safety of a student or another individual if there is a significant and articulable threat to the health or safety of a student or other individual, considering the totality of the circumstances. The University must record the articulable and significant threat that formed the basis for the disclosure and the parties to whom the information was disclosed.

In case of Disciplinary Action - The final results of a disciplinary proceeding may be disclosed if the school determines that the student is an alleged perpetrator of a crime of violence or non-forcible sex offense and the student has committed a violation of the school’s rules or policies with respect to the allegation made against him/her.

University’s obligation to support Study and Research - To organizations conducting certain studies for or on behalf of the University to develop, validate or administer tests, administer aid programs, or improve instruction, if such studies are conducted in a manner that does not permit personal identification of parents and students by individuals other than representatives of the organization

### *ADMINISTRATIVE FEE*

The University may charge a nominal fee to provide access to the educational records as outlined in this policy.





## STUDENT GENERAL GRIEVANCE POLICY AND PROCEDURE

Habib University is committed to providing a method of redress for legally impermissible, arbitrary, or discriminatory practices. The Student Grievance procedure is just that. This procedure, however, is not meant to supplant other policies or procedures, such as but not limited to, the Code of Conduct or Honor Code. It is meant to provide students an avenue for addressing their concerns not mentioned in other University policies and/or procedures. This policy and procedure is not meant to be a disciplinary one, nor one in which sanctions or punishment is handed out. However, if in light of the investigation and resolution an alleged violation of policy, procedure, or law is seen to have occurred, the University reserves the right to adjudicate the alleged violations through the appropriate procedure(s) as are applicable. Where the department or unit in which the violation allegedly occurred has written procedures for student grievances, students should first attempt to resolve the matter through those procedures.

### *INFORMAL PROCESS*

Before filing a formal complaint under this policy, a student should attempt to resolve the matter informally with the person alleged to have committed the violation and/or with the head of the department or unit in which the alleged issue occurred. The student may contact the Office of Student Affairs or Academic Affairs for assistance with informal resolution. Attempts to resolve the matter informally should be completed within sixty (60) days from the time at which the student knew or could reasonably be expected to have known of the action needing resolution.

### *FORMAL CAMPUS RESOLUTION PROCEDURES*

If the incident is not resolved at the informal and/or departmental level, the student may file a formal student grievance. If a student wishes to do so, he/she must do so within the sixty (60) days as defined above regardless of the progress of the informal and/or department level process.

Student grievances must be in writing and signed by the student. Grievances must contain the student's ID number, campus e-mail address, physical address, and phone numbers to the extent available. It is the responsibility of the complainant to update his/her current contact information in order for it to be used throughout the grievance process. All official communication in regard to the complaint will be sent via the University's official communication policies. The complainant should also provide a detailed statement of the specific action being grieved, the approximate date when the action took place, the resulting injury or harm, the specific law,

policy, or rule alleged to have been violated, a description of the evidence supporting the claim, whether informal procedures were available and completed, and the remedy or relief requested. All grievances of an academic nature, including but not limited to Grade Appeals or instructor complaints, should be filed with the chief Academic Affairs officer. Cases originating outside of academics and all cases of discrimination, harassment, or assault, should be filed with the chief Student Affairs officer.

### *INITIAL REVIEW*

Upon receipt of a formal student grievance, the chief Academic Affairs or Student Affairs officer as is applicable will promptly appoint an impartial Grievance Resolution Officer (GRO). The GRO shall review the grievance and make an initial determination regarding whether the grievance is complete, timely, within the jurisdiction of the Student Grievance Procedure, and alleges that, if true, would constitute a violation of law or University policy. The GRO shall complete initial review of the grievance and notify the complainant of the determination in writing within twenty (20) working days of the receipt of the complaint.

If the GRO determines that the grievance is incomplete, is untimely, outside the jurisdiction, or factually insufficient, the grievance will be dismissed. If the grievance raises multiple issues, the GRO will make a determination described above with regard to each issue individually and may investigate some issues and dismiss others pursuant to this review process. If dismissed, the GRO will provide the student with a written explanation of the basis for the dismissal within ten (10) working days.

### *INVESTIGATION AND DECISION*

The GRO will commence the investigation by sending a copy of the written grievance to the community member against whom the grievance has been filed asking for a written response. The respondent shall confirm or deny each fact alleged in the grievance, indicate the extent to which the grievance has merit, and indicate acceptance or rejection of any remedy requested by the grievant or outline an alternative proposal for remedy. The GRO will provide the grievant with a copy of the department or unit's response.

The GRO may seek to mediate a resolution or negotiate an administrative settlement of the grievance at any time during the course of the investigation. If a resolution satisfactory to both the grievant and the respondent is reached, the GRO will notify both parties of the voluntary resolution in writing and the grievance will be dismissed. The GRO shall complete his/her investigation, produce, and file a report within seventy-five (75) working days of the initial receipt of the grievance with both the Offices of Academic Affairs and Student

Affairs. The report should contain a summary of the issues presented by the grievance, a statement of the applicable law or policy, a summary of the factual findings reached in the investigation and a conclusion regarding the recommended outcome of the grievance, including proposed corrective actions, if any. A written determination of the case will be sent by either or both of the offices to the student within ten (10) working days of receipt of the report by the GRO.

## APPEALS

To ensure that the original findings are consistent with Habib University policies and procedures an appellate procedure has been established.

Parties to the decision, either grievant or respondent may submit written requests for appeal to the Student Conduct Officer within five business days from the date of the original decision, except for reasons of new evidence, outlined below, which should be filed within 30 days of the original decision notice. The student should outline the specific issues and rationale for the appeal in his/her written request. Requests for appeal will be considered only when based on one or more of the following:

1. Occurrence of substantial procedural irregularity based upon a violation of student rights;
2. Decision influenced by bias by the hearing officer or board, resulting in a violation of standards of fairness used in disciplinary hearings;

OR

3. Evidence not available at the hearing which, had it been available, would in all reasonable likelihood, have produced a different decision.

Once a completed appeal is received, it will be forwarded to the Chief Student Affairs Officer (CSAO) or Chief Academic Affairs Officer (CAAO) as is applicable for review. S/he will first determine if the student or organization has sufficient basis for appeal, according to the criteria above. If basis exists the case will be referred to the University Appeals Committee (UAC). The UAC may choose to modify the finding of responsibility, modify the sanctions, or modify both; remand the case for a new hearing; or uphold the original decision. Appellants will typically be notified of the decision within ten (10) business days of their submission. The decision of the University Appeals Committee is final.

## ACADEMIC GRIEVANCE POLICY

### INFORMAL PROCESS

An academic grievance arises when a student believes that he/she has been academically disadvantaged or has been subjected to a violation, misapplication or unequal application of university regulations or

procedures. Since most grievances originate within departments or comparable administrative units, any student who feels that he/she has been discriminated against or otherwise treated inequitably should first seek redress within their administrative unit. Disputants should first make a good faith effort to resolve the matter amicably between themselves. If, at this stage, the student feels that his or her grievance has been resolved, the matter ends and no written record will be kept. If no resolution is possible after initial consultation between the disputants, the student is permitted to request mediation by his or her advisor, the Program Director, or applicable dean, as the situation may dictate.\*

\* If the Program Director or the applicable dean is the primary faculty disputant, the student shall be permitted to request informal mediation from the Office of Academic Affairs.

### FORMAL PROCESS

1. The student must submit a written statement and all supporting documentation to the Office of Academic Affairs within ten (10) business days of the failure of the informal process. This statement should detail the grievance and all informal steps taken prior to the filing of a formal complaint.
2. Upon receipt of this statement, the second disputant will be requested to provide his or her account of the dispute to the Chief Academic Affairs Officer (CAAO).
3. After receipt of both statements and all supporting evidence, a mediation session before the UNIVERSITY APPEALS COMMITTEE (UAC) will be set, if possible, within 21 calendar days. Each disputant and the members of the UAC will receive copies of both statements and supporting documentation.
4. At the mediation session, each party will be entitled to present their side of the issue at hand, beginning with the complainant. Each disputant will be permitted to present witnesses to the grievance.
5. Immediately after, the UAC will meet to discuss recommendations for the resolution. These recommendations must include both their findings and their reasoning and be delivered to the CAAO within 3 business days.
6. Academic Affairs will inform the student in writing of the decision within ten (10) business days. The decision may follow the UAC's recommendation or be a modification upon it. If it is a modification, the file record must show the CAAO's reasoning behind the modification.
7. There can be no further appeal once the UAC's decision has been delivered.

### GRADE APPEALS

Grade appeals will be considered a type of academic grievance. Should any student feel that he or she has been graded arbitrarily or capriciously, the student should first attempt to resolve the issue informally with the respective faculty member. If no direct resolution is possible, the student should request arbitration by the Program Director or the applicable dean before filing a formal grievance.

## POLICY ON OFFICIAL COMMUNICATION TO STUDENTS

Official communication to students will come via students' university-provided email accounts. Official correspondence may include, but is not limited to, matters related to students' participation in their academic programs (admission, registration, course selection, etc.) and important notices for individual students (warnings, advising requests, notices of dismissal for the purposes of timely communication). In addition, general information concerning University and program scheduling, fee information, and other matters concerning the administration and governance of the University may be sent to individual student emails and to group lists as determined by University administration. 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. As per its privacy policies, the University will not respond to a student via a generic or otherwise unverifiable "free" email account with sensitive information. Neither faculty nor staff should provide students with grade, transcript, or educational records or information via email. Grades are available through the Learning Management System at a student's convenience.

Use of the University's email system falls under the IT Acceptable Use Policy. Users should be familiar with this policy.

## MID-TERM AND FINAL EXAM POLICIES

### FINAL EXAMINATIONS

Final examinations are given at the end of each semester. The final examinations schedule is announced by the Registrar.

Final examinations are given in all undergraduate courses, unless an exception has been approved by the appropriate school Dean. All students registered in a course for which a final exam is given must attempt the exam at the scheduled exam time, unless an exception is allowed by the Dean of the school. The circumstances in which an exception may be allowed are discussed below.

### MIDTERM EXAMINATIONS

The schedule of midterm examinations varies at the discretion of the instructor.

Midterm exams are generally given during the regularly scheduled class hours and may not exceed the scheduled length of the class. Exceptionally,

midterm exams may be given outside the class hours. The schedule of midterm exams, be they within or outside the scheduled class hour, are announced by the instructor in the course outline distributed to the class during the first week of classes

### MISSED EXAMINATION

All students are expected to complete their assignments, tests, and exams within the time frames and by the dates indicated in their course outlines. However, the University allows a student who misses a mid-term or a final exam due to a religious obligation, medical illness, or family emergency to request a make-up exam.

Examinations will not be rescheduled to accommodate travel, family plans or employment commitments. Generally, a student who misses an exam without a pre-approved alternate arrangement will receive a zero for that exam. Under exceptional circumstances, the appropriate school dean has the discretion to allow a make-up exam even if the student did not have a pre-approved alternate plan. However, all make-up exams must be given before the official close of the semester.

### RELIGIOUS ACCOMMODATION

Habib University recognizes that some students may have bona fide religious conflicts with scheduled examinations. In such cases the University will make reasonable efforts to accommodate the affected students by providing alternative times or methods to attempt examinations.

Students should review the syllabus for each of their courses at the beginning of each semester to determine if personal religious observance will conflict with the schedule of their exams. In case of conflict with a midterm examination, the student must submit to the instructor a statement describing the nature of the religious conflict and specifying the days and times of conflict within a reasonable time of discovering the conflict. If a suitable arrangement cannot be worked out between the student and the instructor, they should consult the appropriate Dean or Program Director.

In case of a final examination, the student must submit a written statement to the instructor, Dean of the school, and Registrar. In such a case, any approved make-up exam may be scheduled after the final exams period but before the official end of the semester. If a student fails to follow this procedure or give timely notice of conflict and subsequently misses the exam, no make-up exam will be given and the student will receive a grade of zero in that exam.

## **POLICIES ON USING HABIB UNIVERSITY TECHNOLOGY**

Habib University technology resources should be used only to accomplish university-specific tasks, goals, and learning objectives. To this end, Habib University prohibits the use of cell phones in the classroom during class. All other use of technology within the classroom is permitted at the discretion of the faculty and the individual schools.

Proper social and professional etiquette must be exercised when using the Habib University IT system. Use of the network implies consent to the monitoring of traffic as necessary. Habib University does not condone the use of inappropriate language when writing to instructors, staff or students and may be cause for disciplinary sanctions, if reported. No Habib University technology resources are to be used to produce, view, store, replicate, or transmit harassing, obscene, or offensive materials. This includes, but is not limited to, material from the internet, screen savers, etc. In addition, the distribution of printed copies of such material, including those from magazines, is not permitted. Habib University will have zero tolerance for any student, faculty or staff members who violate this policy, and immediate disciplinary action may result.

University IT services shall not be used for purposes that could reasonably be expected to cause, directly or indirectly, excessive strain on computing resources or unwarranted and unsolicited interference with e-mail or e-mail systems. Use of IT services that could interfere with other students' or employees' work or disrupt the intended use of network resources is prohibited. Sanctions for misuse of e-mail, Internet or any part of Habib University technology resources will be determined by the Director of Information Technology following consultation with the Provost.

## **CATALOG YEAR**

Catalog year refers to the setting of course and non-course requirements within academic programs as stated in the applicable section of a specific catalog. A student must graduate under the provisions of any Catalog in effect since the student began continuous enrollment at the University, but must do so in a single catalog's entirety.

Continuous enrollment is defined in this policy as being enrolled in classes without a break in semesters/terms, excluding summer terms in most instances, or unless covered in other areas of the Catalog or other student policy documents.

# THE LIBERAL CORE

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The classic liberal arts model demands that the total undergraduate experience include exposure to all the existing divisions of knowledge. Through the University Core and divisional requirements we ensure that all of our students, regardless of major, conform to this high educational aspiration. No well-educated person should remain ignorant of the depth and richness of history and literature, or inarticulate of the wonder of scientific and mathematical inquiry.

Habib University has chosen the liberal arts and sciences model of education out of its commitment to the development of leadership potential as an essential goal of a truly higher education. At the core of our institutional identity as a liberal arts institution is our flagship three-year Liberal Core curriculum that seeks to fulfill our motto of yohsin: 'The worth of all humans is in the measure of their thoughtful self-cultivation.' As they take on the task of forming themselves into adults, professionals, and beyond, the Liberal Core is designed to enable students to reflect knowledgeably on the most critical aspects of their experience in the world they inherit today.

The Core commences with the systematic development of reading, communication, and presentation skills that will continue to be improved throughout our students' undergraduate careers. The curriculum is built around a recurring multidisciplinary engagement with the history, structures, and features of the modern period and world, drawing on powerful texts and artifacts in a range of media from across the arts, humanities and social sciences. From colonialism to nationalism and the nation-state, from war to the global political economy, from the growth

of modern media to science and technology and their relationship to society, our Liberal Core is committed to a rigorous analysis and critique of modernity in all its local, regional, and global complexity. An encompassing historical understanding is essential to the classic liberal education – one that our core curriculum provides with a critical, modern edge.

The principle of yohsin tells us that the cultivation of a beautiful and thoughtful self that shines with the light of care, knowledge and universality is an ancient and universal aspiration. Humanities and the humanistic spirit – which are all about excellence, grace, generosity, knowledge and universality – proliferate across the life and legacy of all cultures. What makes Habib University's Liberal Core unique is its incisive focus on the humanistic knowledge and inheritance that are unique to Pakistan in its surround coupled with a simultaneous focus on Western humanities and knowledge. To help achieve this end, in addition to significant elements within the Liberal Core all students are required to complete at least one course in a vernacular language, "Jehan-e-Urdu" (The World of Urdu), which will exploit the potential of modern Urdu literature and criticism to illuminate crucial aspects of our modernity.

Habib University's core requirements are designed to instill in our students an appreciation of their own context and cultures of thought, a grounded sense of their own self-worth and potential, and to do so in a spirit of global relation and expansive universality. The Liberal Core, together with Jehan-e-Urdu, forms the shared intellectual foundation upon which Habib's community of learners is built.



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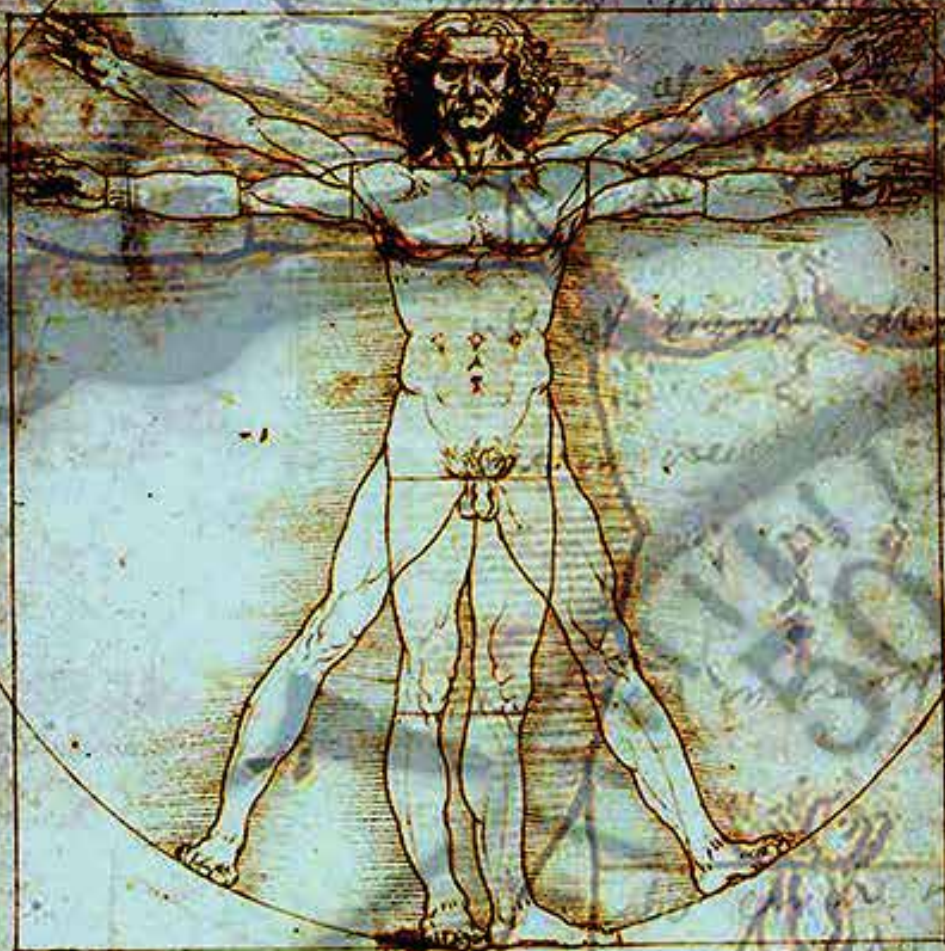
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## Courses

### *CORE 101: Rhetoric & Communication*

The 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 – written, oral, applicative and visual – that our students will need to excel at Habib University and beyond. Our curriculum nurtures our students' rhetorical abilities throughout their college career, especially through the Liberal Core. Rhetoric & Communication is designed to first identify the different 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 & Communication are designed to cultivate all five of these critical abilities, together with sophisticated reading skills. Our students will learn to make their speech and writing a total rhetorical experience, allowing them to communicate as effectively as they can across a variety of media. Class content will focus on compelling and relevant texts broadly defined – essays, journalism, speeches, advertisements, websites, etc. – and chosen to elicit opinion and encourage discussion and debate. As they develop their powers of reading powerful texts,

students will practice and improve communication skills through regular writing assignments, revision exercises, individual and group presentations, and the utilization of 'alternative' (non-traditional) communication media like websites and social media. Rhetoric & 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 human 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 both ourselves and our world to ask the question: What is it to be modern? What is modernity?

Our 'modernity' is the very air we breathe. It encompasses, at a 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 throughout the modern period. This course is thus designed as a multidisciplinary study of key texts that illuminate the various features and structures of our lives and our world, of the dynamic culture of modernity. Examples of themes covered in the course are:

- Political modernity, e.g., democracy and dictatorship, nationalism and the nation-state, revolution and sovereignty, colonialism and imperialism
- Economic modernity, e.g., free-market capitalism, neoliberalism and globalization, Keynesianism and the welfare-state, socialism and communism, international aid and the global political economy
- Scientific modernity, e.g., Cartesianism, Newtonianism, quantum theory, technological utopianism
- Aesthetic modernity, e.g., realism, art-for-art's sake, modernism and the avante-garde
- Modernity and media, e.g., print, radio, film, television, journalism and the entertainment industry
- Modernity and gender, e.g., patriarchy, feminism and masculinity

- Modernity and the environment, e.g., industrialism, fossil fuels, ecological imperialism and animals
- Modernity and religion (e.g., science and religion, reform and fundamentalism, religion and politics)

Through critical and intensive engagement – in discussion, debate, and writing – with both classic and contemporary texts from the history of reflection on modernity, students will gain a sophisticated and articulate understanding of both themselves and their world that will be further refined throughout the core.

### *CORE 201: Pakistan & Modern South Asia*

For the first time in history, 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?

This question takes on a particular urgency in Pakistan as the region passes through the current period of crisis and change. With a special focus on the emergence and trajectory of Indo-Muslim nationalism and the creation of Pakistan, this course will be a conspectus of the modern history of South Asia from the colonial period, including the rise of anti-colonial nationalism and decolonization, to the Cold War and the contemporary period of turmoil and transformation. While focusing on the history of Pakistan's challenging present, students will also learn about the larger, regional and global context in which that history has unfolded.

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 crucially learn to identify major features of the colonial economy and state 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 traditions took place, processes that continue into the present. They will learn to see contemporary conflicts and ideologies 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.

Course materials will again be multidisciplinary – including, for example, anthropology, literature and film – but will be primarily historical. This course will combine lectures and seminars and will be writing intensive.

### *CORE 202 & 301: Hikma I & II – History of Islamic Thought*

In the manner of the classic liberal core curriculum, Habib University's flagship two-semester course sequence in regional and global humanities, Hikma I & II, takes the students to the pre-modern and ancient worlds of philosophy, religion, literature and art that remain our heritage. Placed after our students have successfully grasped the specific nature and thought of the world of modernity, the Hikma courses have been designed to fulfill a critical goal of the classic liberal arts education: the task of inheritance – a task that includes commentary and discussion, as well as criticism and judgment. Bridging the students' crucial sophomore and junior-years, this sequence is designed to take our students to the next level of humanistic study and conceptualization, as well as of sophistication in reading, discussion, critical thinking and writing.

The content of the Hikma course sequence responds to the widespread call to revisit the humanistic inheritance of the world's many civilizations and regions, and to include this human heritage as an essential part of the liberal arts curriculum. The course thus takes an expansive world-historical and global view of the region's rich heritage of Islamic thought in its intense and distinctive engagement with both Greek antiquity and the other Abrahamic traditions, as well as ambient regional traditions, such as Buddhism and the Bhakti. The Hikma course sequence thus offers the students of Habib University a panoramic and rigorously Universalist perspective that connects with Islam's distinctive inheritance, one that is also shared with its neighbors. The syllabus begins with an exploration of the deep philosophical and spiritual content of key source texts of



the Abrahamic and Semitic traditions, especially the Quran and Hadith, as well as material from some of Islam's earliest thinkers before its encounter with ancient Greek thought. The course then turns to some of the key texts from Greek antiquity – by Plato, Aristotle and Plotinus – that have been read avidly in the philosophical tradition of Islam. This interaction provided a productive engagement that has resonated through the centuries in Islam's distinctive literatures, and philosophical and spiritual discourses. The course thus reads the rich texts emanating from this encounter in Muslim thinkers such as Al-Farabi, Avicenna, Suhrawardi and Mulla Sadra, as well as philosophically and spiritually rich Islamic poets, such as Rumi and Amir Khusraw.

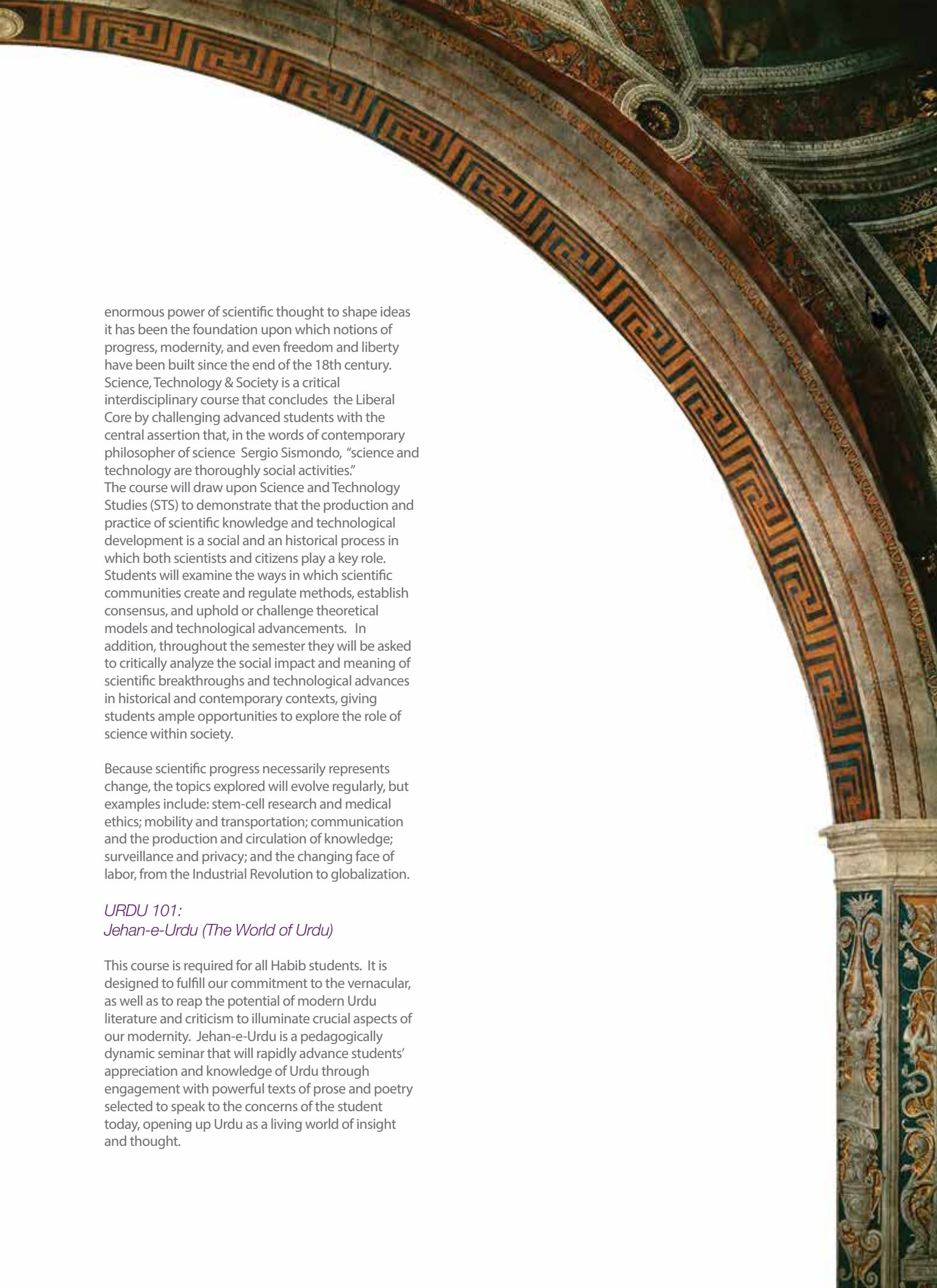
Another goal of the Hikma course sequence is to serve as a substantial introduction to the cross-philosophical engagement between Islam and other Asian traditions. Since such an introduction is not meaningful without some familiarity with non-Islamic traditions, the latter will be achieved through close reading and discussion of select primary sources in Indic and Chinese thought. In addition, the course will be focused on contemporary critical reflections in comparative metaphysics and theology particularly as they pertain and apply to parallels and contrasts between Buddhism, Taoism and Islamic spirituality.

The course will end with readings in the contemporary art, literature and thought of South Asia drawn from the living inheritance of the various traditions explored.

The overall objective of these sections of the course is to provide insights into Islam as a Universalist religion that has contributed in bridging the gap between the Semitic and Western world on the one hand, and the religious worlds of South and East Asia on the other hand. Though the course material will be primarily philosophical and literary, we will also engage material from history, politics and the arts.

#### *CORE 302: Science, Technology & Society*

The centrality of science and technology in the contemporary world is unparalleled in the history of human societies and cultures. Because of the



enormous power of scientific thought to shape ideas it has been the foundation upon which notions of progress, modernity, and even freedom and liberty have been built since the end of the 18th century. Science, Technology & Society is a critical interdisciplinary course that concludes the Liberal Core by challenging advanced students with the central assertion that, in the words of contemporary philosopher of science Sergio Sismondo, "science and technology are thoroughly social activities." The course will draw upon Science and Technology Studies (STS) to demonstrate that the production and practice of scientific knowledge and technological development is a social and an historical process in which both scientists and citizens play a key role. Students will examine the ways in which scientific communities create and regulate methods, establish consensus, and uphold or challenge theoretical models and technological advancements. In addition, throughout the semester they will be asked to critically analyze the social impact and meaning of scientific breakthroughs and technological advances in historical and contemporary contexts, giving students ample opportunities to explore the role of science within society.

Because scientific progress necessarily represents change, the topics explored will evolve regularly, but examples include: stem-cell research and medical ethics; mobility and transportation; communication and the production and circulation of knowledge; surveillance and privacy; and the changing face of labor, from the Industrial Revolution to globalization.

*URDU 101:*  
*Jehan-e-Urdu (The World of Urdu)*

This course is required for all Habib students. It is designed to fulfill our commitment to the vernacular, as well as to reap the potential of modern Urdu literature and criticism to illuminate crucial aspects of our modernity. Jehan-e-Urdu is a pedagogically dynamic seminar that will rapidly advance students' appreciation and knowledge of Urdu through engagement with powerful texts of prose and poetry selected to speak to the concerns of the student today, opening up Urdu as a living world of insight and thought.

# SCHOOL OF ARTS, HUMANITIES AND SOCIAL SCIENCES

## SOCIAL DEVELOPMENT AND POLICY

*BSc (Honours) Program*

*Faculty Members:*

**Dr. Aaron Mulvany**, Assistant Professor

**Fahd Ali**, Assistant Professor

**Dr. Hasan Ali**, Assistant Professor

**Dr. Nauman Naqvi**, Assistant Professor

**Dr. Nosheen Ali**, Assistant Professor and Program Director

*Visiting Scholars:*

**Dr. Sahar Shafqat** (Spring 2015), Chair of Political Science at St. Mary's College, U.S.A.

## Vision

"Development" has become a principal idea of our times, and an object of aspiration for individuals, communities, and governments alike. 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 a comprehensive understanding of development and social change — one that is firmly rooted in an ethic of care and grounded in a sense of place. Such a careful, place-based understanding is deeply connected to the love of knowledge as well as the search for truth, once considered as essential aims of pedagogy. Indeed, such connections are often reflected in language itself. The Urdu term *Khayal*, for example, simultaneously



means thought, imagination, and care. 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, field-based practice. 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 will explore how major development concerns such as poverty, 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. Employing a transdisciplinary approach to the study of social problems, the program integrates perspectives and

skills drawn from a wide range of disciplines, including:

- Anthropology
- History
- Economics
- Sociology
- Political Science
- Religious Studies
- Philosophy
- Literature
- Environmental Studies

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 – can incorporate lived experience and vernacular sensibilities into policy design at the national and international levels.



## BSc (HONOURS) IN SOCIAL DEVELOPMENT AND POLICY: REQUIREMENTS FOR THE MAJOR

Students majoring in Social Development and Policy are required to finish a total of 35 courses, while maintaining a minimum grade of C+ (2.33 CGPA), in order to graduate.

For in-depth learning in their field, 14 courses are required in the SDP major itself. Of these 14 courses, 6 are compulsory, covering key topics in theory and method, the field practice requirement, and the senior thesis requirement. The other 8 are elective courses, which a student may use to explore different dimensions of development and social transformation. 5 of these may be any course offered in SDP, provided at least 2 are upper-division courses, while the remaining 3 must be upper-division courses taken in one of the following thematic concentrations:

- Poverty and Inequality
- Governance and Human Rights
- Urban and Community Studies
- Culture and Expression
- Ethics and Social Justice

Alongside their specialized training, SDP students are required to take courses outside their major to facilitate a broad exposure to knowledge. The overall graduation requirements are outlined in the following table:

Course Category	Number of Courses to complete	Credits
<b>Number of Courses to complete</b>		
Liberal Core	6	24
Jahan-e-Urdu	1	4
<b>Social Development and Policy</b>		
Foundational Theory and Method	3	12
Field Practice	1	4
Electives	5	20
Thematic Concentration	3	12
Senior Thesis	2	8
<b>Arts, Humanities, and Social Sciences</b>		
Regional Language	3	12
Urban Experience	1	4
Communication Studies & Design	2	8
<b>School of Science and Engineering</b>		
Math for Social Sciences	1	4
Introduction to Computer Science	1	4
Scientific Methods	1	4
Elective	1	4
<b>Free Electives</b>		
Any AHSS or SSE*	4	16
<b>Overall</b>	<b>35</b>	<b>140</b>
* provided any prerequisites have been met		



## REQUIREMENTS FOR THE MINOR

To minor in SDP, students must take a total of 5 courses, three core courses and two electives. The core courses are: Development and Social Change, Ethics and Methods of Research, and Field Practice. The Field Practice course may only be taken once the other two core classes have been successfully completed. Of the 2 electives, at least one must be upper-division (300- or 400-level).

## COURSE DESCRIPTIONS FOR THE FIRST YEAR

### FALL 2014

#### *SDP 101: Development and Social Change*

This course will introduce students to key themes in the history, theory, and practice of development. Students will explore the histories of power and powerlessness through which social inequalities have been produced and heightened, the dynamics of different development models and paradigms in the post-World War II era, the theoretical frameworks that have been put forward to analyze these dynamics, and the problems and prospects of putting development ideas into practice in specific areas of concern such as poverty, food insecurity, and environmental degradation.

#### *SDP/CSD 103: Urban Experience*

This introductory course in immersive learning is designed to open up students to the context in which they live, research, and work. Through exercises in individual and group-led observation, students will be encouraged to reflect on the diversity of places and communities that surround them, and become both curious and comfortable about dialoguing with them. The course will cater to the necessity for new undergraduates to obtain an in-depth understanding of the built and lived landscape, in the rapidly changing urban and rural landscapes of Pakistan. It will involve field trips to designated areas of Karachi and its surrounding countryside, complemented by theoretical and methodological discussions pertaining to the dynamics of urbanization, field research, and Karachi.

#### *SDP 111: History of Economic Thought*

This course explores the evolution of key ideas within economic thought and analyzes how these ideas led to different ways of theorizing in economics. We will begin by examining the theories and methodologies presented by two of the greatest thinkers in classical political economy: Adam Smith and David Ricardo. This will be aided by understanding the influence of rational subjectivism and utilitarianism on economic thought. The final part of the course will examine the critique of political economy offered by Karl Marx. The course will rely on textbook readings and notes prepared by the instructor.

### SPRING 2015

#### *SDP 102: Ethics and Methods of Research*

Combining theory and hands-on experience, this course will expose students to key approaches in research design and

methodologies. They will learn and practice a variety of qualitative and quantitative techniques, including observation, interviews, focus groups, surveys, and archival research. Alongside, they will study and debate the ethical complexities of conducting fieldwork and implementing research and development projects in underprivileged communities.

#### *SDP 112: Catastrophe and Culture*

How do people, communities, and cultures respond to calamities? Do disasters represent key moments in the development of societies? This course will explore the effects of catastrophic events on human thought and activity and interrogate how societies use art, politics, religion and technology to depict, recall, understand, narrate, predict, cope with, mitigate, prevent, or even contribute to the impact of disasters.

#### *SDP 114: World Religions*

The development of religious ideas integral to the world's predominant religions today is a process that has unfolded for millennia. The concepts of angels, demons, and that of monotheism itself are recurring themes in the history of religions that can be found in ancient Indic as well as Zoroastrian religious texts. World Religions will orient students coming to Habib with an understanding of the world's various classical religious traditions, with a special emphasis on regional religions. The course will be taught with a scientific method applied to the early development of religious ideas since the last minor ice age (12,000-10,000 BC), with the beginning of fire and then nature worship as its starting point, as reflected in the veneration of fire by Indic and Zoroastrian traditions, and then move to the study of monotheism under the Abrahamic faiths.

#### *SDP 116: Nationalism and Ethnic Conflict*

Rarely a day goes by without some report of ethnic conflict somewhere in the world. In fact, by some accounts ethnic conflict is the most serious problem confronting us today. In this course, students will attempt to understand ethnic conflict, and explore creative ways in which it might be addressed. An understanding of ethnic conflict necessitates that we acquaint ourselves with some basic terms and concepts, especially the central concept of "ethnicity." Therefore, we will first study the definition of ethnicity and other major terms. Then we will examine a specific case of ethnic conflict in Rwanda and pay special attention to the case of Karachi as a multiethnic city. Next, we will turn to theories of ethnic tension and conflict and will examine the international dimensions of ethnic conflict. Finally, we will turn to ways in which ethnic conflict can be managed and resolved.

#### *SDP 118: Reading Marx with Dickens*

This course will focus on the historical epoch — the industrial revolution — that shaped the writings of Karl Marx and Charles Dickens. Where Marx uses the ideas of class consciousness, exploitation, and social injustice to rally the working class, Dickens's novels quite movingly depict the subjective experiences of working individuals - particularly children and young adults. Students will read a selection of Marx's writing together with *Hard Times*, *Great Expectations*, and *A Tale of Two Cities*, exploring how social theory and literature can reinforce each other in illuminating processes of historical change.





## COMMUNICATION STUDIES & DESIGN BA (HONOURS) PROGRAM

**Jamil Dehlavi**, Associate Professor

**Laila Bogustova**, Assistant Professor

**Dr. Markus Heidingsfelder**, Assistant Professor

**Saima Zaidi**, Assistant Professor

### *What is Communication Studies & Design?*

Communication is at the heart of society. It is the central operation by which societies produce and reproduce themselves. Communication Studies & Design (CSD) is dedicated to the nature and dynamics of this process. Developed on the basis of market research, as well as in consultation with academics from leading regional and global universities, the CSD curriculum provides inter- and transdisciplinary instruction not only in the function but also in the practical application of a wide range of communication and media forms.

### *Vision*

We believe that one has to make media in order to understand media. This is why the CSD curriculum combines theory and practice, thinking and making. Drawing from both the origins of the discipline as well as its later developments, Habib University offers a program that integrates the practical and the theoretical, the social sciences and the humanities.

### *What will students get from studying Communication Studies & Design?*

Students in Pakistan today represent a generation with an unprecedented potential to meet the challenges of the modern world. The unique combination of communication theory with communication practice helps unfold this potential. CSD students will develop an awareness of different types of media and learn to produce artifacts of communication ranging from the text-based to the graphic to the visual. Therefore CSD graduates are prepared for careers in the media industries as well as in media management, public policy, and any other sector that requires media expertise. Critical thinking, systematic analysis, and clear and articulate communication skills consistently developed and refined from first class to final thesis will be a crucial advantage in any market.

### *Streams*

The CSD program integrates perspectives and skills drawn from a wide range of areas including Communication Theory, Media Studies, Cinema, Journalism, Design, Literature, Sociology, Aesthetics, and History. It consists of three streams: Communication Studies (Com), Communication Design (ComD), and Moving-Image Media Production (Mov).

### *Communication Studies (Com)*

The Com stream builds upon the core academic CSD curriculum that provides the historical and theoretical grounding for the department as a whole. It offers students the opportunity to explore the complex relationship between communication, media, and society. We analyze the form and function of mass media communication as well as new media forms, from digital platforms like Google or Facebook to multimedia storytelling. The Com student will also enjoy the opportunity to produce – in the form of websites, podcasts, videos, and digital archives – public documents representing the fruits of their research and discovery.

### *Communication Design (ComD)*

The ComD stream offers students the opportunity to explore the visual combinations of words and images in traditional and new media. The skills learned will enable students to visualize ideas, organize information effectively and aesthetically, and present that information to the intended audience. Gaining skills in typography, photography, and illustration, students will actively investigate the range of methods of visual production. Graduates will be prepared with an active understanding of graphic identity, publication and interaction design, and environmental and information design. ComD's emphasis on communication in local and regional contexts enables students to become graphic problem-solvers, sensitive to their environment and to its location within global society.

### *Moving-Image Media Production (Mov)*

The Mov stream gives students the opportunity to explore the making of moving-image media in a variety of forms. Grounded in a knowledge of cinema and media history and theory, students will have the opportunity to explore fictional and documentary filmmaking, experimental video, and journalistic visual reporting and storytelling. With hands-on experience in the scriptwriting, filming, editing, and exhibiting of their own original work, students gain a broad, working understanding of digital film and television production.

### *BA (Honours) in Communication Studies & Design: Requirements for the Major*

Communication Studies & Design is a four-year (eight semester) program. Students majoring in Communication Studies & Design are required to finish a total of 36 courses, while maintaining a minimum grade of C+ (2.33 GPA), in order to graduate. These courses consist of the major requirements, the university-wide Liberal Core, and general requirements for the School of Arts, Humanities and Social Sciences.

The CSD major is comprised of 18 courses for the Com and Mov streams and 16 courses for ComD. 4 of these courses are considered to be “gateway” courses and are compulsory for all CSD students regardless of concentration:

- Introduction to Media Studies
- Brief History of Communication
- Design Studio I
- Guerrilla Filmmaking

Students completing 3 of their 4 “gateway” courses in their first year are well-positioned to confirm their CSD major upon entry to their second year. The remaining requirements will be determined by each student’s stream.

## **STREAM REQUIREMENTS**

### *Com*

CSD students selecting the Com stream are required to take the following courses:

- Forms of Journalism I and II
- Communication Theory
- Media Evolution
- Media Ethics
- Public Relations & Public Affairs
- Methodology I and II

Com students must also take 2 studio electives and any 4 additional electives in CSD.

### *ComD*

Students choosing the ComD stream have the following requirements:

- Design Studio 2
- 4 ComD studios covering Illustration, Typography, Interaction Design, and Photography
- 2 studios specializing in either Illustration, Interaction Design, or Moving Images
- 3 ComD studio electives
- 2 seminars in Design Theory/History

### *Mov*

Students choosing the Mov stream must complete the following requirements:

- Storytelling and Scriptwriting
- Directing
- Cinematography
- Producing for Film
- Producing for Television
- Production Design
- Post-production
- Video Journalism
- Documentary Filmmaking
- Animation & Special Effects
- History of Film
- Film Theory

### Additional Expectations

Specialization is important to attain excellence in a given field, but it is equally necessary for students to be able to deal with the multimedia, multicultural, and multi-skilled reality of today. We therefore encourage them to experiment and engage with new methods of media-making by taking elective courses in each of the streams. This gives them the skills and instills the confidence required to combine different media. It is recommended that students choose these courses in consultation with their advisor.

All CSD students are also required to undertake a two semester capstone project that they will design and complete under the supervision of their faculty advisor. The range of possible capstone projects is nearly infinite, but it should be noted that, especially in the ComD and Mov streams, the capstone project is likely to be studio-based.

Alongside their specialized training, CSD students are required to take courses outside their major to facilitate a broad exposure to knowledge, see table on next page:

Course Category	Number of Courses to complete		
	Com	Com D	Mov
Number of Courses to complete			
Liberal Core	6	6	24
Jahan-e-Urdu	1	1	4
Communication Studies & Design Major Requirements			
Introductory Theory/History	2	2	2
Introductory Studio	2	3	2
Stream Studio	0	5	10
Studio Electives	2	4	0
Theory/History Seminars	8	2	2
Electives	4	0	2
Senior Thesis/Capstone Project	2	2	2
Arts, Humanities, and Social Sciences			
Urban Experience	1	1	1
Social Development and Policy	2	2	2
Electives			
School of Science and Engineering			
Scientific Methods	1	1	1
Quantitative Reasoning	1	1	1
Free Electives			
Any AHSS or SSE*	4	6	4
Overall			
	36	36	36
* provided any prerequisites have been met			

## COURSE DESCRIPTIONS FOR THE FIRST YEAR

### FALL 2014

#### *CSD 101: Introduction to Media Studies*

This course provides an introduction to the trivium of Media Studies: Media Analysis, Media History and Media Theory. We systematically examine different analytical methods and apply them to essays, photos, films, websites or Facebook profiles; we look at how the invention of technologies like the printing press and the computer changed society; and we finally ask how Media Theory tries to explain the very nature of media, taking new forms like Media Anthropology, Media Law and Media Philosophy into account. The course also includes the mediation of basic practical skills like public speaking, writing, filming, editing, and setting up a website.

#### *CSD 111: A Brief History of Communication*

This course will introduce students to the key concepts of communication by using the narrative of system differentiation. We start with families, villages and tribes to examine early communication forms like earth and ancestor cults; then explore the formation of large territorial empires and the spread of cross-border communication that leads to forms of religious reflection on identity and distinctness; watch the first forms of bureaucracy emerge; proceed to the representation of society as a hierarchy in stratification to finally examine the difficult terrain of the so-called modern world. This course will be offered in Spring 2015.

#### *CSD 121: Design Studio 1*

This studio course is the gateway course for students choosing to pursue the Design stream. It is a prerequisite for further Design courses, and is required of all CSD majors. The course introduces the students to the basic skills for effective visual communication by learning from the natural and built environment. They will engage in traditional as well as digital media to investigate the fundamentals of form such as line, texture and colour through hands-on-assignment and critiques.

### SPRING 2015

#### *CSD 112: Music as Communication*

Music, that well-ordered collection of sounds and rhythms, does not by itself signify anything. Yet for nearly all human beings music means something. Hearing sadness in a chord progression, or recognizing the call of a nightingale or the coming rain in a musical scale, seems to come naturally to all of us. But why should this be so? This course examines the mechanisms by which music is given meaning and the cultural traditions through which human experience is expressed through sound. Questions we will be exploring include: How does music differ from language, and what might they have in common? How are rhythm, tempo, and harmony related to the experience of our bodies? And can music make fun of itself?

#### *CSD 122: Design Studio 2*

This course is designed to investigate the relationship between words and images. It offers the opportunity to explore the conceptual and visual attributes of form on the two dimensional surface. In this intensive and integrated studio, students will learn image-making processes through instruction in drawing, as well as digital production techniques.

#### *CSD 142: Guerrilla Filmmaking*

This studio course is the gateway course for students choosing to pursue the Moving-Image Media Production stream. It is a total immersion course in filmmaking from concept to delivery, and will be required of all CSD majors. The emphasis is on guerrilla filmmaking with a hands-on approach to teaching. Students will be required to write a script for a short film of their choice, taught the use of digital cameras and sent out to shoot their project. The footage they bring back will be analyzed by the teacher and the class together and then edited into a coherent piece.

# SCHOOL OF SCIENCE & ENGINEERING

## Faculty Members:

**Dr. Anzar Khaliq**, Assistant Professor of Physics

**Dr. Charles Timothy Spracklen**, Dean of Research and Continuing Education

**Dr. Jibran Rashid**, Assistant Professor of Computer Science

**Dr. Mohammad Shahid Shaikh**, Associate Professor of Electrical Engineering

**Muhammad Shumail**, Assistant Professor of Electrical Engineering

**Dr. Oleg Nikolaevich Artamonov**, Assistant Professor of Mathematics

**Dr. Oliver Faust**, Associate Professor of Electrical Engineering

**Dr. Shah Jamal Alam**, Assistant Professor of Computer Science

**Dr. Shoaib Zaidi**, Dean of the School of Science and Engineering

**Dr. Waqar Saleem**, Assistant Professor of Computer Science

**Dr. Samina Yasmin**, Assistant Professor of Chemistry

The School of Science and Engineering (SSE) at Habib University aims to be a leader in Science and Engineering education in Pakistan and the region. It will play an instrumental role in the development of a knowledge-based society in Pakistan, invigorating the local society and economy. It aims to produce leaders, innovators and entrepreneurs who will develop novel, indigenous ways to benefit society through the use of technology.





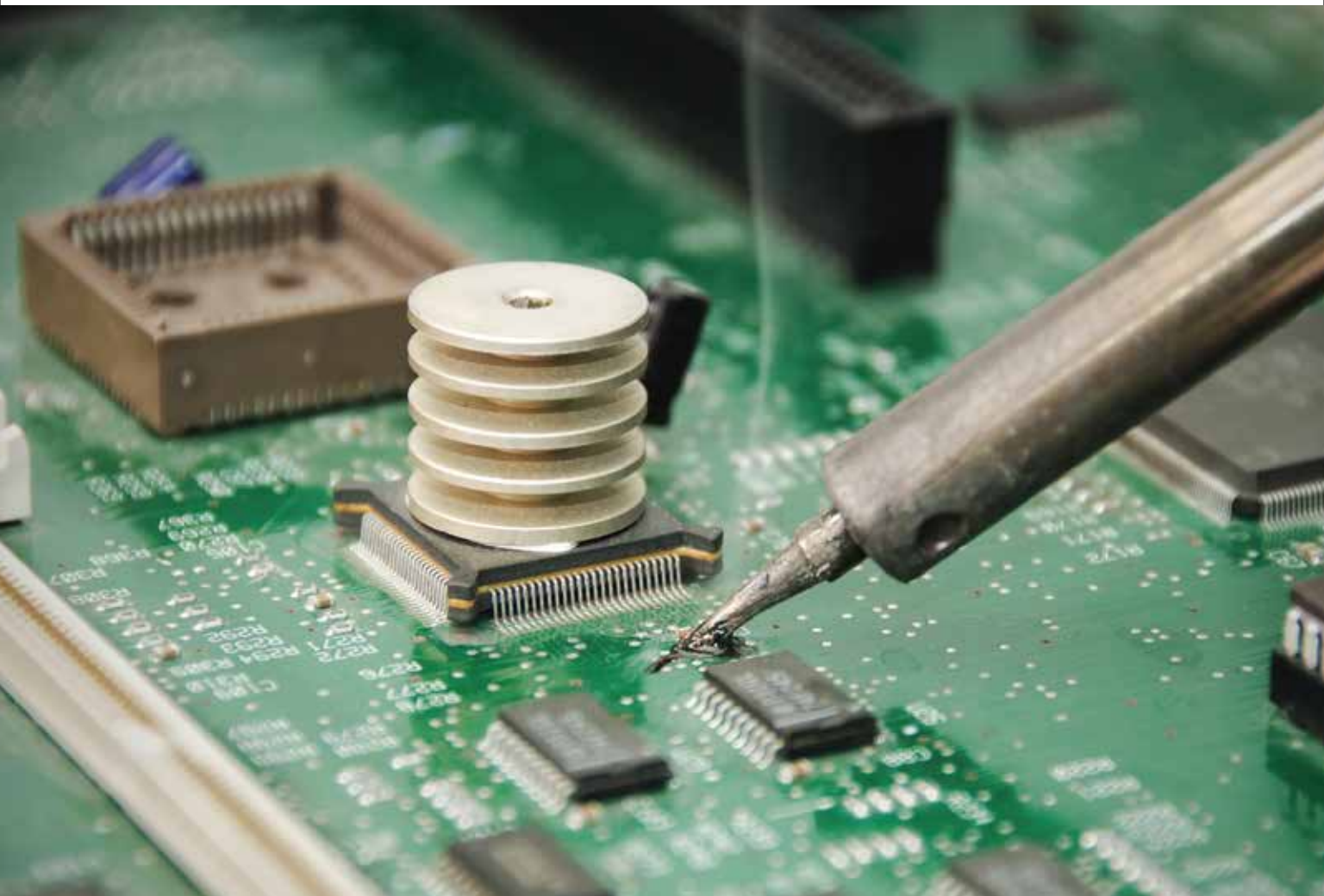
## Vision

To be an agent of positive change in society through excellence in locally contextualized and globally competitive science and engineering education and research.

## Programs and Pedagogy

SSE currently offers two programs – BS in Computer Science and BS in Electrical Engineering. The curricula have been decided in consultation with leading international academics taking into account the needs of the industry and will be updated frequently. Faculty with proven track records in research and teaching will work closely with students, facilitated by well-equipped laboratories and research facilities.

Through small class sizes and low student-teacher ratio, students will have ample opportunities to engage with their professors and their research activities both within and outside the classroom. At SSE, traditional learning methods will be supplemented with project-based and community-based learning, blending practice with theory and combining a rigorous science and engineering education with the liberal arts. Emphasis is placed on hands-on learning skills and developing an intuition for the subject matter. SSE graduates will be well-rounded individuals, able to generate and integrate knowledge across disciplines. They will have a unique blend of exceptional technical competence, breadth of knowledge, passion for life-long learning, awareness of the larger implications of their work, sensitivity toward local contexts, exceptional communication and team-work skills, and entrepreneurial spirit.



## Common First Year and Declaration of Major

Most SSE students take a common set of courses in their freshman year which allows them to decide their major as late as the end of the year. The Common First Year includes courses on Mathematics, Computer Science, Electrical Engineering, and Energy, as well as electives. Fulfilling the electives with a specific set of courses keeps the choice of major between Computer Science and Electrical Engineering available. Fulfilling the electives any other way restricts the choice of major to Computer Science only. Students will consult their academic advisors when choosing courses to fulfill the electives in the Common First Year.

## Supporting Skills

Scientists and engineers impact society through innovation and invention. They must possess excellent communication and teamwork skills, be sensitive to cultural norms, be aware of the ethical impact of their work, and be able to continue learning outside the classroom. In addition to the Liberal Core and Language requirements of the University, SSE students will take courses that develop the supporting skills needed for future success.

## Electrical Engineering

### *BS Program*

Electrical Engineering is everywhere in our daily lives. Electrical Engineers design and build communication systems such as mobile phones and computer networks, design microelectronic silicon chips that are at the heart of modern computing devices, develop biomedical devices and instrumentation to save lives, and advance new 'green' technologies that will power our homes and industries while protecting the environment.

The Habib University Electrical Engineering Program will combine a rigorous science and engineering education with the liberal arts. It will provide students with technical knowledge in Mathematics and Sciences, Computation, Electronics, Electrical Power Systems, Electromagnetics, Telecommunication Systems, Automation and Control Systems, etc. The program is ideally suited to students who:

- Like to study Mathematics and Physics and are curious about how electrical and electronic systems work;
- Are eager to become critically conscious and environmentally responsible Engineers of the 21st century;
- Are ready to help solve Pakistan's current energy crisis;
- Are fascinated by the sheer power of electrical energy for sustaining the economy;
- Are interested in designing and building the next generation of mobile communication networks;
- Want to learn more about embedded systems that are at the heart of many of our home appliances.

## The Academic Program

The first year of the program provides firm grounding in natural sciences, mathematics, computing and electrical engineering. Foundational courses in computer science and electrical engineering will provide students a meaningful introduction to both the disciplines. Students will then take core electrical engineering and mathematics courses that will provide a solid foundation for taking more advanced elective courses. The final year is devoted to a year-long capstone project, technical electives, and supporting courses.

Alongside their specialized training, students are required to take courses outside their major to facilitate a broad exposure to knowledge. This includes the mandatory Liberal Core component.

## Objectives

Bachelor of Science degree program in electrical engineering is designed to:

- Provide a broad liberal arts education that is augmented by a sound knowledge of mathematics, natural sciences, computing and engineering, which are essential to analyze and design complex software and systems;
- Provide the hands-on experience essential for sciences and engineering practice;
- Provide breadth and depth through interdisciplinary and discipline-specific education;
- Create an awareness of legal responsibilities, civic duties and contemporary issues, and an understanding of economic, social, environmental, professional, ethical and health & safety issues;
- Ensure that the engineering graduates have the ability to communicate well and are able to work in multidisciplinary teams as members or leaders.

## Requirements for the Major

A major in Electrical Engineering requires satisfactory completion of 46 courses (approximately 140 credit hours of coursework) as shown in the table below:

Course Category	Number of Courses to complete			Credit Hours
	Total	Compulsory	Elective	
<b>University Requirements</b>				
Liberal Core	6	6	0	18
Local Languages	1	1	0	3
			<b>Total</b>	<b>21</b>
<b>Economics and Management</b>				
Economics and Management	2	2	0	4
			<b>Total</b>	<b>4</b>
<b>Natural Sciences and Mathematics</b>				
Mathematics	4	4	0	11
Natural Sciences	5	5	0	10
			<b>Total</b>	<b>21</b>
<b>Computing</b>				
Computing and Programming	2	2	0	8
Numerical Methods and Simulation	1	1	0	1
Data Structures and Algorithms	1	1	0	3
			<b>Total</b>	<b>12</b>
<b>Electrical Engineering Foundation</b>				
Circuits and Electronics	3	3	0	12
Signals	2	2	0	7
Hardware and Interfacing	2	2	0	8
Engineering Workshop Practice	2	2	0	2
			<b>Total</b>	<b>29</b>
<b>Electrical Engineering Breadth</b>				
Basic Electrical Engineering	1	1	0	4
Computer Architecture and Design	1	1	0	4
Electromagnetic Theory	1	1	0	3
Signals, Communications and Control	3	3	0	12
			<b>Total</b>	<b>23</b>
<b>Electrical Engineering Depth</b>				
Electives	5	0	5	17
			<b>Total</b>	<b>17</b>
<b>Interdisciplinary Engineering Courses</b>				
Engineering Courses other than Electrical Engineering	2	2	0	7
			<b>Total</b>	<b>7</b>
<b>Capstone Project</b>				
Capstone Project I & II	2	2	0	6
			<b>Total</b>	<b>6</b>
<b>Overall</b>	<b>46</b>	<b>41</b>	<b>5</b>	<b>140</b>

## Program Thrusts

Three program specializations are defined in the following areas:

- *Telecommunications*

Telecommunication systems play an increasingly important role in our daily lives. A good telecommunications infrastructure is essential for the economic development of a country. With the introduction of the 3G and 4G cellular phone systems and the proliferation of data networks, Pakistan will need more telecommunication engineers to design, build, and maintain these systems.

- *Power Systems*

The ready availability of electrical power at a reasonable price is essential for the economic development of a country. In order to come out of the current energy crisis Pakistan needs to launch more power generation projects, upgrade its transmission network and modernize the distribution system in order to reduce distribution losses. All this will be done by electrical engineers who specialize in power systems.

- *Electronics*

Modern electronics are everywhere around us, from audio amplifiers in entertainment systems and televisions to electronic chips in computing and communication devices. The percentage of electronics in traditionally mechanical systems, such as automobiles, has steadily increased to more than 30% and is expected to increase further. With the increasing role of electronics in all areas of human activity, well-trained electronic engineers are expected to be in increasing demand.

## Computer Science

### *BS Program*

The Computer Science program delivers a theoretical and practical understanding of the principles behind the numerous computer systems integral to our everyday lives. The core Computer Science curriculum is designed to engage students with diverse interests. It ensures that students gain a computational thinking perspective, which enables them to innovate and contribute in fields ranging from natural sciences and engineering to social sciences and philosophy. The emphasis on the foundations of Computer Science allows students to not only gain familiarity with current systems but to apply their knowledge of Computer Science to solve new and unseen problems. Graduating students will find themselves well placed for positions across economic sectors including information technology, industry, commerce and banking, and government. Graduates will also be well-equipped to start their own technology oriented businesses or pursue graduate studies.

### *Academic Program*

The curriculum approaches Computer Science as the study of algorithms and data structures - their formal properties, their

linguistic and mechanical implementations, and their applications. Courses on these topics are supported by introductory courses that lay the foundation, by Mathematics courses that provide the necessary tools and develop mathematical maturity, and by Laboratory courses that provide training in the scientific method. In the higher divisions, there is a choice of specialization in one of 4 program thrust areas, described in detail below. Many of the courses contain a laboratory component that provides a practical understanding of the concepts from the lectures. The year-long Capstone Project in the senior year encourages the application of acquired knowledge and skills to solve a real world problem. Through a large number of electives, there is room for exploration both within SSE and across schools at the University.

### *Objectives*

*Knowledge and Career:* Graduates will have strong foundational knowledge of mathematics and computer science, and the accompanying skills, both in breadth and in depth, to position themselves equally well in the Information Technology industry, as technology entrepreneurs, and/or in graduate programs in Computer Science or other technical and scientific fields.

*Continuous Learning:* Graduates will have a hands-on approach to self-learning and research, and will continually update their knowledge, skills and technical know-how.

*Ethics and Awareness:* Graduates will be able to assess the societal, cultural, social, religious, legal, environmental, local, and global impact of their actions and will choose an ethical course of action in their professional, personal and daily lives.

*Communication and Teamwork:* Graduates will be able to effectively communicate and collaborate with people from diverse backgrounds and in a variety of settings.

### *Learning Outcomes*

Upon graduation, students will have the following abilities:

*Analysis:* analyze a given situation and reduce it to one or more problems that can be solved via computer intervention.

*Design:* design one or more computer-based solutions of a given problem and select the solution that is best under the circumstances.

*Programming:* program a given solution in a variety of programming languages belonging to different programming paradigms.

*Implementation:* design and implement software systems of up to moderate complexity.

*Tools:* work with the latest tools that support development, e.g. IDE's, version control systems, debuggers, profilers, and continuous build systems.

*Self-learning:* research, learn and apply the requirements needed to implement a solution for a given high level problem description.

*Ethics and Awareness:* foresee both impact and possible ramifications of computing practices.

*Communication and Teamwork:* work effectively in inter-disciplinary teams.

## Course Major and Minor

Students enrolled with the Computer Science department will graduate with a major in Computer Science. Students who do not have Computer Science as a major can take certain Computer Science courses in order obtain a minor in Computer Science. The selection of courses is outlined in the Course Categories section below.

### Requirements for the Major

A major in Computer Science must fulfill the following requirements:

Course Category	Number of Courses to complete			Credit Hours
	Total	Compulsory	Elective	
<b>Computer Science Requirements</b>				
Foundation	4	4	0	16
Core	3	3	0	10
Logic, Languages & Programming	1	0	1	4
Theory	1	0	1	3
Software Systems	1	0	1	4
Thrust	3	0	3	12
Electives	2	0	2	8
Capstone Project	2	2	0	6
			<b>Total</b>	<b>63</b>
<b>Support</b>				
Mathematics	4	4	0	12
Science & Engineering	5	5	0	5
			<b>Total</b>	<b>17</b>
<b>Electives</b>				
Arts, Humanities and Social Sciences	2	0	2	6
Digital Humanities and Social Sciences	2	0	2	6
SSE Skills	2	1	1	4
Electrical Engineering	2	0	2	6
Free Electives	4	0	4	12
			<b>Total</b>	<b>34</b>
<b>University Requirements</b>				
Liberal Core	6	6	0	18
Local Languages	1	1	0	3
			<b>Total</b>	<b>21</b>
<b>Overall</b>	<b>45</b>	<b>21</b>	<b>19</b>	<b>135</b>

### Requirements for the Minor

A minor in Computer Science will be awarded to students from other departments who meet all of the following requirements.

- CS 110, CS 111, and CS 132
- Any 2 courses from the "Core" category
- Any 2 other CS courses, 200-level or higher

Please see relevant sections for details on course categories and for course descriptions.

## Program Thrusts

Every student majoring in Computer Science must choose a thrust which may be chosen from the following areas or self-defined in consultation with his or her academic advisor.

- *Information Security*

Computers are increasingly used to store, process and communicate sensitive information. They are also heavily used in the infrastructure and strategic assets of many countries. Increasingly users do not have control over where their data is stored and on the communication channels transmitting the data. Even if they do, third parties can gain access to computing resources and steal, monitor or corrupt data or interrupt communication for malicious purposes. Data may even be lost to natural disasters. Information Security is an emerging area that deals with keeping data and communication safe from loss and intrusion.

- *Cloud Computing*

Cloud Computing is an emerging paradigm in computing that enables the migration of services and infrastructure to remote servers accessible over the Internet. In other words, users can store data, run software and even develop new software on the Internet. The Cloud Computing thrust will explore the systems and processes that make these services possible. Some of the questions include: how can services be made available over a network connection, how can multiple systems in multiple locations work together to deliver the same service, how should data be stored so that it is available instantly from anywhere?

- *Big Data*

Computing resources are getting cheaper. As a result, huge stores of information are becoming common, e.g. medical records, data on collision of sub-atomic particles, social networking habits. Big Data is the term used to describe the study of dealing with such huge amounts of data – filtering it, storing it, searching through it, categorizing it, detecting trends and patterns, making recommendations based on it, summarizing it, and presenting it in human friendly ways.

- *Computer Graphics & Visualization*

In most cases, information is best understood when presented visually. Visualization is the study of presenting potentially large amounts of data in a format that is visually appealing and faithful to the underlying data. The aim is to present a summary, highlight salient features and enable detailed exploration. Computer Graphics is the study of computer created visual objects: creating them (3D modeling and scanning), manipulating them (animation and editing), interactively controlling them (computer games), specifying their behavior (simulation), and displaying them (rendering, GPUs).

Every student majoring in Computer Science must choose a thrust which may be chosen from above or self-defined in consultation with his or her academic advisor.

Course Category	Course Selection
	Computer Science
Foundation	CS 110 Computational Thinking I CS 111 Computational Thinking II CS 130 Digital Logic and Design CS 132 Elements of Computing Systems
Core	CS 200 Data Structures and Algorithms CS 212 Theory of Computation CS 310 Design and Analysis of Algorithms
Logic, Languages & Programming	CS 222 Programming Languages CS 226 Parallel Programming CS 323 Advanced Programming Techniques others as designated

Course Category	Course Selection
<b>Computer Science</b>	
Theory	as designated
Software Systems	CS 330 Operating Systems CS 353 Software Engineering others as designated
Thrust: Information Security	as designated
Thrust: Cloud Computing	as designated
Thrust: Big Data	CS 355 Databases others as designated
Thrust: Computer Graphics & Visualization	CS 340 Computer Graphics others as designated
Hardware Systems	CS 332 Computer Architecture and Design others as designated
Applications	CS 351 Artificial Intelligence CS 357 Numerical Methods others as designated
Electives	Any CS course.*
Capstone Project	CS 491 Capstone Project I CS 492 Capstone Project II
<b>Support</b>	
Mathematics	MATH 101 Applied Calculus MATH 102 Differential Equations MATH 205 Linear Algebra MATH 210 Probability and Statistics
Laboratory	ENER 191 Energy I ENER 192 Energy II ENGR 191 Engineering Workshop I ENGR 192 Engineering Workshop II SCI 200 Scientific Method
<b>Electives</b>	
Arts, Humanities and Social Sciences	Any course offered by School of Arts, Humanities and Social Sciences and chosen in consultation with advisor.*
Digital Humanities and Social Sciences	Any course from School of Arts, Humanities and Social Sciences cross-listed with Computer Science.*
SSE Skills	Technology Management and Entrepreneurship, Technical Communication, Professional Ethics & Law, Engineering Economics, Research Methods, or others as designated
Electrical Engineering	Any EE course.*
Free Electives	Any course offered at the University except 100 level CS courses.*
*provided any prerequisites are met	

## COURSE DESCRIPTIONS

### SCIENCE

#### *PHY 101. Physics I: Mechanics. (2-3). Credit 3.*

Explores principles of classical mechanics. The topics include: momentum, motion in a plane, relative inertial frames and relative velocity, straight-line kinematics, particle dynamics with force, conservative forces, potential energy and conservation of energy, conservation of momentum, center of mass and the center of mass reference frame, rigid bodies and rotational dynamics, conservation of angular momentum, central force motions, impulse and collisions, dynamics of rotational motion, gravitation and fluid mechanics.

#### *PHY 102. Physics II: Electricity & Magnetism. (2-3). Credit 3.*

Topics include: electromagnetism and electrostatics, electric charge, Coulomb's law, electric field, Gauss's law, electrostatic potential, magnetic fields, Biot-Savart law and Ampere's law, magnetic materials, time-varying fields and Faraday's law of induction, Hall effect, displacement current and Maxwell's equations.

Prerequisite: PHY 101

#### *ENER 191. ENERGY I. (0-3). Credit 1.*

Introduces key concepts related to energy. The topics include: energy sources, impact of energy production and use, energy consumption, hydroelectricity, renewables, energy technology and practice, fossil fuels, energy policy, energy audits.

#### *ENER 192. ENERGY II. (0-3). Credit 1.*

Continues with the topics from ENER 191 in more detail.

Prerequisite: ENER 191.

#### *SCI 200. Scientific Method. (1-3). Credit 2.*

Introduces students to the scientific method; illustrates how the scientific method is applied in various disciplines – chemistry, physics, energy and computer science.

### MATHEMATICS

#### *MATH 101. Applied Calculus. (3-0). Credit 3.*

Topics include: functions, limits and continuity, total and partial derivatives and their geometrical interpretation, application to tangent and normal, linearization, maxima/minima, limits of indeterminate forms, methods of integration, improper integrals, multiple integrals, application to arc length, area, volume, introduction to vectors, vector differentiation, vector integration and their applications, gradient, divergence and curl with their applications.

#### *MATH 102. Differential Equations. (3-0). Credit 3.*

Topics include: first order ordinary differential equations (ODEs), homogeneous and non-homogeneous linear ODEs, differential operator, Cauchy-Euler equation, ODE models of electric circuits, systems of ODEs, series solutions, partial differential equations (PDEs), method of separation of variables, wave, heat and Laplace equations, solutions using Fourier and Laplace transforms.

Prerequisite: MATH 101.

#### *MATH 203. Complex Variables and Transforms. (2-0). Credit 2.*

Topics include: complex numbers, DeMoivre's theorem, complex variables and complex functions, analytic functions, harmonic functions, Cauchy-Riemann equations, Laurent series, singularities, poles, residues and contour integration, line and surface integrals, Green's and Stoke's Theorem and applications, Fourier Series, Fourier Transform, Laplace Transform, Z-Transform.

Prerequisite: MATH 102.

#### *MATH 205. Linear Algebra. (3-0). Credit 3.*

Topics include: vectors, field and vector spaces, matrices and determinants, elementary row and column operations, rank and inverse, linear transformation, systems of linear equations and their solutions, orthogonality, least squares, eigenvalue and eigenvectors, singular value decomposition, lines and surfaces in 3D.

#### *MATH 210. Probability and Statistics. (3-0), Credit 3.*

Provides an introduction to data analysis, probability and decision making, and introduces students to some of the commonly used statistics software packages. The topics include: descriptive and inductive statistics, analysis of variance, limit theorems, regression and correlation, hypothesis testing and confidence intervals, sampling, probability, independence and conditional probability,



binomial, geometric, gamma, Poisson and Gaussian distributions, Bayes' theorem and Bayesian inference, law of large numbers, random processes and variables, joint random variables, cumulative and probability distributions, moments, joint and conditional distributions, discrete- and continuous-time queuing systems, Markov chains, transition probabilities, and steady-state distribution.

*MATH 291. Numerical Methods and Simulation. (0-3). Credit 1.*

Explores numerical techniques for mathematical computations. The topics include: floating point number system, error analysis, roots of equations, interpolation, numerical differentiation and integration, solution of systems of linear equations, least squares, eigenvalues, eigenvectors, solution of ordinary and partial differential equations, simulation models, Monte Carlo simulation, applications. Prerequisite: MATH 102; MATH 205.

## SSE

*MGMT 201. Technology Management and Entrepreneurship. (2-0). Credit 2.*

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 of these will be supplemented with case studies.

*ECON 201. Engineering Economics. (2-0). Credit 2.*

Topics include: time Value of Money, cash flow analysis and inflation, methods of evaluating investments, comparison of alternative investments, economic analysis of projects, management of engineering projects, team building, quality leadership.

## ELECTRICAL ENGINEERING

*EE 111. Electric Circuit Analysis. (3-3). Credit 4.*

Topics include: introductions to circuit elements, circuit laws, network reduction, node and mesh analysis; energy storage elements; transient and sinusoidal steady state analysis; AC energy systems; magnetically coupled circuits, the ideal transformer; polyphase circuits; computer applications in circuit analysis.

*EE 171. Digital Logic and Design. (3-3). Credit 4.*

Topic include: 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. (Cross-listed with CS 130.)

*ENGR 191. Engineering Workshop I. (0-3). Credit 1.*

Topic include: Matlab, LabView, SolidWorks and Proteus softwares, familiarization with electrical symbols and basic laboratory equipment, soldering, de-soldering and drilling, schematic and PCB designing and hand fabrication, cutting, finishing, assembling and drilling of metal and acrylic sheet, making internal and external threads using taps and dyes, and introduction to home wiring.

*ENGR 192. Engineering Workshop II. (0-3). Credit 1.*

Topics include: Continuation of Engineering Workshop I, Matlab, LabView, SolidWorks and Proteus software, cutting, finishing, assembling and drilling of metal and acrylic sheet, building a small electrical system such as a power supply. Prerequisite: ENGR 191.

*EE 211. Introduction to Electronics. (3-3). Credit 4.*

Topics include: Device physics, PN junction diodes, bipolar junction transistors (BJTs), FETs and MOSFETs and their terminal characteristics, biasing circuits, single transistor amplifiers and their frequency response, electronic circuits using operational amplifiers, and simulation using OrCAD or Multisim. Prerequisite: EE 111.

*EE 231. Basic Electrical Engineering. (3-3). Credit 4.*

Topics include: Electromechanical energy conversion, transformers, DC and AC machines special purpose motors, basic components of a modern electrical power system including generation, transmission, distribution and utilization of electrical power, and protection of power system.

Prerequisite: EE 111; PHY 101.

*EE 251. Signals and Systems. (3-3). Credit 4.*

Topics 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.

Prerequisite: MATH 203.

*EE 271. Data Structures and Algorithms. (2-3). Credit 3.*

Topics include: Algorithms for solving various searching, and sorting problems; Arrays, Records, Set structure, Stacks, Queues, Singly and Doubly Linked Lists, Recursive versus Iterative Algorithms, Trees, Binary Trees, Tree traversal (In-order/Pre-order/Post-order traversal), Conversion between trees and heaps, Heaps, Heap-sort, Graphs as Adjacency Matrices, Traversal of Graphs (DFS, BFS), Path lengths, Shortest Path, Searching & Sorting Algorithms (Insertion sort, Selections sort, Merge sort, Radix sort), and Hashing.

Prerequisite: CS 110

*EE 311. Integrated Electronics. (3-3). Credit 4.*

Advanced theoretical concepts of electronic devices; device and circuit models in simulation packages such as OrCAD; FETs and their frequency response, operational amplifier theory and applications, linear digital ICs, feedback and oscillator circuits and power supplies.

Prerequisite: EE 211.

*EE 321. Communication Systems. (3-3). Credit 4.*

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.

Prerequisite: EE 251.

*EE 341. Electromagnetic Theory. (3-0). Credit 3.*

Extension of static electric and magnetic fields to time-varying fields and electromagnetic waves; Maxwell's equations; propagation of electromagnetic waves through different types of media and their behavior at the interfaces.

Prerequisite: MATH 101; PHY 102.

*EE 351. Probability and Stochastic Processes. (3-0). Credit 3.*

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; introduction to stochastic processes; applications.

Prerequisite: MATH 203.

*EE 353. Digital Signal Processing. (3-3). Credit 4.*

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.

Prerequisite: EE 251.

*EE 371. Computer Architecture and Design. (3-3). Credit 4.*

Central processing unit: organization, instruction and data representations; fundamentals of assembly language; microprogramming; memory systems and I/O interfaces; I/O structures; direct memory access; interrupts. (Cross-listed with CS 330.)

Prerequisite: CS 132, EE 171.

*EE 375. Microcontrollers and Interfacing. (3-3). Credit 4.*

Introduction to microcontrollers; overview of applications and major families; architecture and assembly language programming, addressing modes and instruction set; timer programming, interrupt programming, Interfacing I/O devices; sensing, ADC and DAC; isolation techniques; applications such as stepper and DC motors; serial communication with microcontrollers using industry standard buses.

Prerequisite: EE 371.

*EE 461. Control Systems. (3-3). Credit 4.*

Models of dynamic systems, linear time-invariant (LTI) and transfer function models; impulse, step, transient and steady-state response; root locus technique, Bode plots, Nyquist criterion; gain and phase margins, Nichols charts,

lead, lag compensation; state-space techniques; simulation and controller design using Matlab and Simulink.  
Prerequisite: EE 251.

*EE 491. Capstone Project I. (0-9). Credit 3.*

*EE 492. Capstone Project II. (0-9). Credit 3.*

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.

Prerequisite: Approval of an EE faculty member and the SSE Dean.

### *Telecommunications*

Proposed elective courses are given below. The actual courses offered will depend upon the technology trend, available faculty and the number of students opting for these courses.

Computer Networks  
Digital Communication  
Antenna Theory & Design  
RF and Microwave Engineering  
Wireless Communication  
Mobile Communication: 4G and beyond

### *Power Systems*

Proposed elective courses are given below. The actual courses offered will depend upon the technology trend, available faculty and the number of students opting for these courses.

Power Systems Analysis  
Power Electronics  
Renewable Energy Systems  
Electrical Machines  
Power System Economics  
Smart Grid

### *Electronics*

Proposed elective courses are given below. The actual courses offered will depend upon the technology trend, available faculty and the number of students opting for these courses.

Digital Electronics  
Industrial Electronics  
Power Electronics  
Robotics & Mechatronics  
Measurement & Instrumentation  
Embedded Systems

## COMPUTER SCIENCE

*CS 110. Computational Thinking I. (3-3). Credit 4.*

Learning to identify problems and approach their solution in a manner that lends itself to a computer implementation. The topics include: top-down and bottom-up problem solving, variables, control structures, functions, modularity, divide-and-conquer, iteration, recursion, algorithms and their expression as pseudo-code, flowcharts and program code.

*CS 111. Computational Thinking II. (3-3). Credit 4.*

Provides a comprehensive introduction to modern computer science; covers the mathematical foundations of Computer Science ranging from propositional logic to automata and computability. The topics include: proofs, probability and randomness, recursion relations, O-notation, graph theory, quantum computing and formal methods.

Prerequisite: CS 110

*CS 130. Digital Logic and Design. (3-3). Credit 4.*

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. (Cross-listed with EE 171.)

*CS 132. Elements of Computing Systems. (3-3). Credit 4.*

Explores the construction of a modern, full-scale computer system from the ground up; exposure to major Computer Science abstractions studied in detail in later courses. It will home 12 implementation projects focusing on building the hardware platform and software hierarchy of a computer system.

Prerequisite: CS 111

*CS 200. Data Structures and Algorithms. (3-3). Credit 4.*

Study of common data structures: singly and doubly linked lists, skip lists, binary search, B-trees and tries, self-balancing trees (AVL, red-black, splay), heaps and treaps, binomial and Fibonacci heaps, graphs and minimum spanning trees, LIFO/FIFO structures (queues and stacks), priority queues, maps, multi-maps and hash tables, conflict resolution in hashing.

Prerequisite: CS 111

*CS 212. Theory of Computation. (3-0). Credit 3.*

Investigates the nature and limits of computation. The topics include: finite automata, regular expressions, context-free grammars, Turing machines, Church-Turing thesis, decidability, halting problem, reducibility, time and space measures, complexity classes, P vs. NP.

Prerequisite: CS 111

*CS 222. Programming Languages. (3-3). Credit 4.*

Evaluates the strengths and weaknesses of various programming languages, and considers at least two different programming languages. The topics include: functional, procedural, imperative, generic, and structured programming, parallel programming and concurrency control, web programming, meta and generic programming, compiled and interpreted languages, lambda calculus and anonymous functions.

Prerequisite: CS 111

*CS 226. Parallel Programming. (3-3). Credit 4.*

Discusses the theory and practice of interacting software and hardware entities, and arising problems such as stable failures; uses the theory of formal methods to provide deep insights into the nature of stable failures; uses programming examples that range from basic two node networks to highly complex software constructs for big data processing.

Prerequisite: CS 111

*CS 310. Design and Analysis of Algorithms (3-0). Credit 3.*

Introduces basic algorithms, analysis and complexity of algorithms, and the concept of NP-completeness. The topics include: algorithm analysis, asymptotic complexity, recurrence, and O-notation, equivalence of iteration and recursion, head and tail recursion, stack unwinding, pre- and post-conditions, bubble, insertion, quick, heap, shell, and q-sort, post-, pre-, and in-order traversal, depth- and breadth-first traversal, Dijkstra's, Prim's and Kruskal's algorithms, Bellman-Ford and Floyd-Warshall algorithms, Huffman coding and Burrows-Wheeler transform, Rabin-Karp and KMP algorithms, Fourier transform and FFT, parallel algorithms, Amdahl's and Gustafson's laws, Karp-Flatt metric, Knapsack problem and TSP, dynamic programming, NP-completeness.

Prerequisite: CS 200, MATH 210,

*CS 323. Advanced Programming Techniques. (3-3). Credit 4.*

Introduces object orientation, generic programming, and the use of standard libraries. The topics include: data abstraction and encapsulation, objects, classes, and instances,

inheritance, virtual functions, abstract classes and polymorphism, templates and compile-time code generation, exception handling, concurrency and thread safety, containers and iterators, function objects (functors) and function pointers, functions on ranges. Laboratories will further cover code style conventions and automatic documentation generation.

Prerequisite: CS 200

*CS 330. Computer Architecture and Design. (3-3). Credit 4.*

Will cover the central processing unit including organization, instruction and data representations, fundamentals of assembly language, microprogramming, memory systems and I/O interfaces, I/O structures, direct memory access, interrupts. (Cross-listed with EE 371.)

Prerequisite: CS 132, CS 130/EE 171.

*CS 332. Operating Systems. (3-3). Credit 4.*

Provides an understanding of the basic components of a general purpose operating system; The topics include: multi-user systems, process and CPU management, multi-threading, kernel and user modes, cooperative processes, synchronization, concurrency, threads, and deadlocks, memory management, virtual memory, relocation, external fragmentation, paging and demand paging, secondary storage, security, and protection, file systems, I/O systems, distributed operating systems, scheduling and dispatch, laboratories provide hands on experience with different operating systems, project on the design and implementation of a piece of system software.

Prerequisite: CS 132, CS 200

*CS 340. Computer Graphics. (3-0). Credit 3.*

Study of techniques and concepts fundamental to graphical rendering. The topics include: color models, clipping, rasterization, z-buffer, the human visual system, pipeline based rendering, ray tracing, space partitioning structures, quad- oct- and kd- trees, bounding boxes and bounding volume hierarchies, collision detection.

Prerequisite: CS 200, MATH 205

*CS 351. Artificial Intelligence. (3-3). Credit 4.*

Study of some of the major areas of artificial intelligence: modeling, planning, decision making, and learning. The topics include: intelligent agents and expert systems, search and state space, min-max principle and alpha-beta pruning, constraint satisfaction problems, games and adversarial search, logical agents and inference, planning, uncertainty and probabilistic reasoning, clustering and classification, supervised and unsupervised learning, Self Organizing Maps, k-means, regression, and nearest neighbors, support vector

machines, neural networks and genetic algorithms, reinforcement learning, boosting, and weak learning, ubiquitous computing.

Prerequisite: CS 200

*CS 353. Software Engineering. (3-3). Credit 4.*

Examines the fundamental principles of software engineering: planning, design, analysis, development, documenting, testing, delivery and maintenance of a software system. The topics include: the software life cycle, software development models, extreme programming, and agile methodology, unit and system testing, software specification and requirements gathering, prototyping and iterative design, correctness, outsourcing and open source, user interface design and quality assurance, software quality and change management; project on the design and implementation of a large software system.

Prerequisite: CS 200

*CS 355. Databases. (3-3). Credit 4.*

Understanding the design and use of different databases with an emphasis on relational databases. The topics include: relational, object-relational, object-oriented, hierarchical, and network database models, distributed database management systems, transaction management, concurrency control, and recovery, data storage and indexing, SQL, query processing and optimization, database evaluation and tuning, redundancy, normalization and fragmentation, data independence and integrity, security and privacy, XML, database administration, data warehousing.

Prerequisite: CS 200

*CS 357. Numerical Methods. (3-0). Credit 3.*

Explores numerical techniques for mathematical computations. The topics include: IEEE floating point standard, error analysis, roots of equations, interpolation, numerical differentiation and integration, solution of systems of linear equations, least squares, eigenvalue decomposition and QR/SVD factorizations, solution of ordinary and partial differential equations, optimization, simulation models, and Monte Carlo simulation.

Prerequisite: CS 111, MATH 102; MATH 205.

*CS 490. Capstone Project I. (0-9). Credit 3.*

*CS 491. Capstone Project II. (0-9). Credit 3.*

Application of learned material to real world problem solving; involves the selection/identification of a real world problem, related research and analysis, implementation, deployment and evaluation of a solution.

Prerequisite: Approval of a CS faculty member and the SSE Dean.







### **Location of Habib University**

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