EAST WEST UNIVERSITY

excellence in education

Undergraduate Catalog 2004

"A meaningful synthesis of eastern culture and values with western thought and innovation"

Undergraduate Catalog 2004

Undergraduate Catalog 2004
East West University

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University Profile

Mission Statement

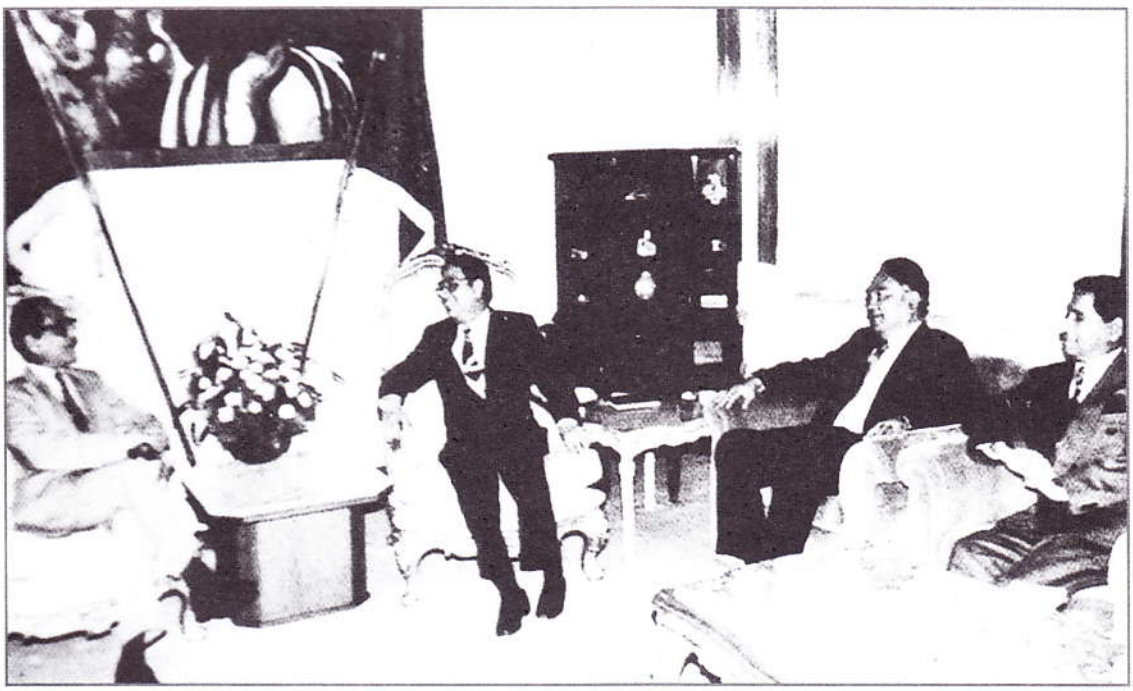
In keeping with its name, East West University, rated among the top private universities, endeavors to synthesize eastern culture and values with western thought and innovations. As an institution of higher learning that promotes and inculcates ethical standards, values and norms, East West University (EWU) is committed to the ideals of equal opportunity, transparency, and non-discrimination.

The primary mission of EWU is to provide, at a reasonable cost, post-secondary education characterized by academic excellence in a range of subjects that are particularly relevant to current and anticipated societal needs. Central to the university's mission is providing students with opportunities, resources and expertise to achieve academic, personal and career goals within a stimulating and supportive environment. EWU is striving not only to maintain high quality in both instruction and research, it is also rendering community service through dissemination of information, organization of training programs and other activities. Sensitive to the needs of its students and staff, EWU is committed to providing a humane, responsive and invigorating atmosphere for productive learning and innovative thinking.

History

The idea of establishing a private university to provide quality education at an affordable cost in Bangladesh was first mooted by a group of prominent academics, business leaders, professionals and education enthusiasts led by Dr. Mohammed Farashuddin. With this end in view, this group formed a non-profit, non-political, charitable organization called Progoti Foundation for Education and Development (PFED). East West University is its first major project. Members of the Board of Directors of East West University are: Mr. Jalaluddin Ahmed, Mr. S.M. Nousher Ali, Mr. Farooque B. Chaudhury, Dr. Rafiqul Huda Chaudhury, Mr. Syed Manzur Elahi, Dr. Mohammed Farashuddin, Mr. Mohammed Zahidul Haque R.Ph., Dr. Saidur Rahman Lasker, Dr. Muhammad A. Mannan, Professor M. Mosleh-Uddin, Mr. Shelley A. Mubdi, Mr. M.A. Mumin, Dr. Khalil Rahman, Mr. H.N. Ashequr Rahman and Mrs. Razia Samad.

After being accorded permission by the Government under the Private University Act (Act 34) of 1992, East West University was launched in 1996. Classes started in September, 1996 with 6 faculty members and 20 students in the present campus of 45, Mohakhali Commercial Area, Dhaka.



From left Dr. Mohammed Farashuddin, Syed Manzur Elahi and H. N. Ashequr Rahman with former President Shahabuddin Ahmed

Accreditation and Collaboration

East West University has been accredited by the Government of the People's Republic of Bangladesh, and its curricula as well as programs have been approved by the Bangladesh University Grants Commission. The President of the People's Republic of Bangladesh is the Chancellor of EWU. The Vice Chancellor, the Pro-Vice Chancellor, and the Treasurer, are appointees of the President of the country in his capacity as the Chancellor of the University.

East West University has formal collaboration agreements with some leading universities in the USA; among those are:

Pace University (New York)
Suffolk University (Boston)
Southern Illinois University at Carbondale

It has also entered into collaboration agreements with a number of other well-known universities in the USA, UK and Australia.

Location

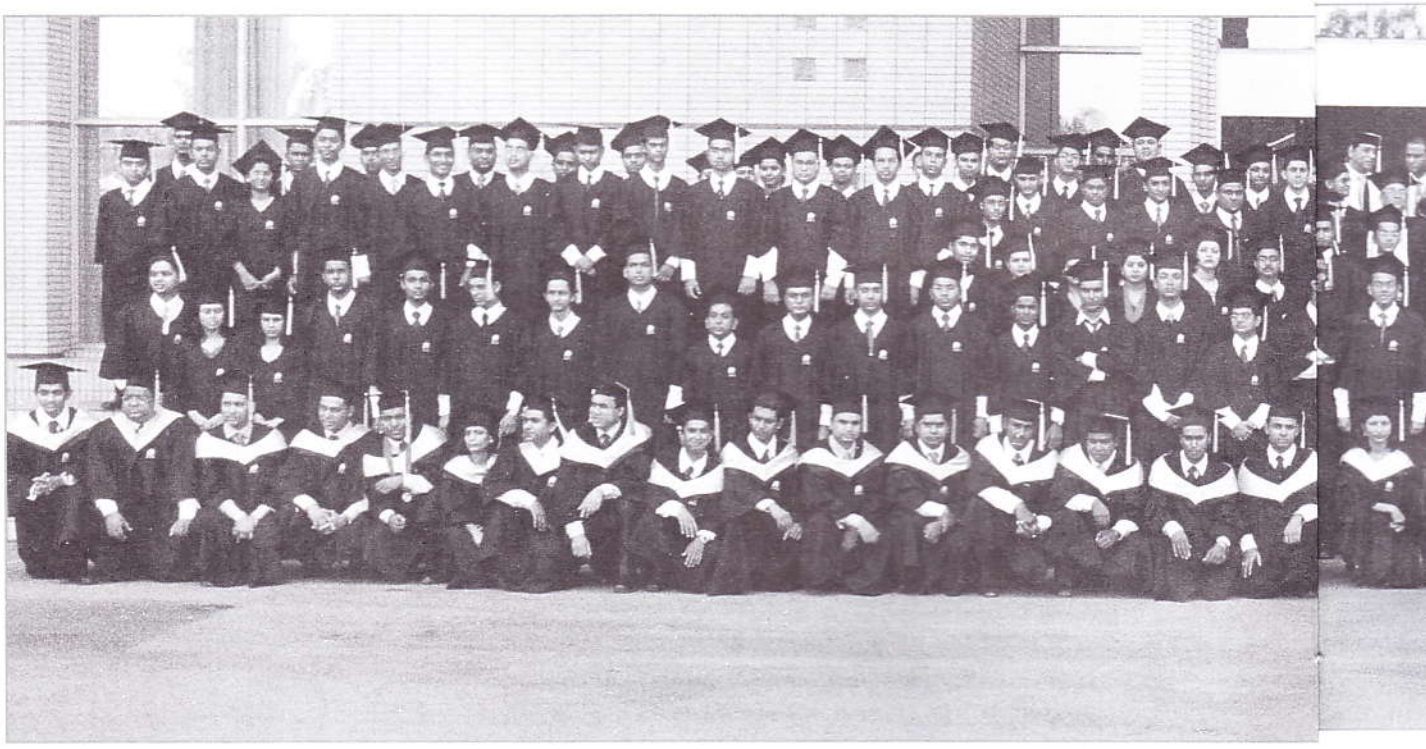
The temporary campus of the university is located at 43,45,46 and 49 Mohakhali C/A, Dhaka. It consists of 1(one) thirteen-storied, 1(one) ten-storied and 2(two) six-storied buildings with approximately 1,00,000 (one lac) sft of space. The campus is situated at the heart of the city and can be easily accessed by all modes of public transportation.

With a view to shifting to its own campus, EWU has purchased 555.75 decimals of land at Mouja Vadham, P.S. Tongi, District – Gazipur. It has also received allotment of 1 (one) bigha of land at Uttara from RAJUK. Most recently, the university has entered into an agreement to purchase a total of 9.6 bigha land at Aftabnagar, on the Progoti Sarani adjacent to BTV, the stipulation is to commence construction of the first EWU Campus in Aftabnagar in the first half of 2004. East West University projects to be able to move to its own campus by end 2005.

Degrees Offered

Currently, EWU offers the following four-year Bachelor degrees:

- B.B.A. (Concentration in Accounting, Marketing, Finance, Management, International Business, and MIS)
- B.Sc. in Computer Science
- B.Sc. in Computer Science and Engineering
- B.Sc. in Information and Communications Engineering
- B.A. in English
- B.S.S. in Economics
- Bachelor of Pharmacy



In future, programs will be offered in the following areas:

- Nursing • Law • Journalism
- Health Management
- Management Information System (MIS)
- Population Sciences

EWU has also been successfully running MBA and EMBA programs since 1999. The university is also offering Master degree in Computer Applications (MCA) and MA in English from Fall 2002. English is the medium of instruction and examination for all programs offered by EWU. Graduate program in Law is part of the future plan.

Semesters: (EWU has 3 semesters in an academic year)

Spring : January – April (Fourth Sunday of January)
Summer : May – August (Fourth Sunday of May)
Fall : September – December (Fourth Sunday of September)

Class Meetings:

Classes are held from Saturday through Thursday. Each undergraduate course class meets two times a week for a total of three hours per week. In EWU, for 1 (one) credit theory, 1 (one) hour of class per week and for 1 (one) credit lab, 2 (two) hours of class per week is followed. If classes cannot be held as per schedule due to unavoidable reasons, makeup classes are arranged as follows:

Slot	Week Day	Make-up
ST	Sunday, Tuesday	Thursday
TR	Tuesday, Thursday	Sunday
SR	Sunday, Thursday	Tuesday
MW	Monday, Wednesday	Saturday

Non-Discrimination East West University believes that every type of discrimination, whether social or cultural, whether based on race, gender, color, social condition, language or religion, is to be overcome and eradicated.

Disclaimer The content of this catalogue is subject to change without notice. Every student accepted for registration in the University shall be deemed to have agreed to such deletions, revisions or addition whether made before or after his/her acceptance.

East West University does not accept any responsibility for loss or damage suffered or incurred by any student as a result of suspension or termination of services owing to strikes, lockouts, riots, weather, or any other cause beyond reasonable control of the University.

Class of 2003 with the Hon'ble President Professor Dr. Iajuddin Ahmed

Adminstration

President :	Dr. Mohammed Farashuddin
Treasurer :	Syed Manzur Elahi M.A. (Economics)
Pro-Vice Chancellor (Acting Vice Chancellor):	Dr. Syed Ferhat Anwar
Dean of Faculties :	Professor Abdul Mannan M.B.A (Marketing), University of Hawaii, Hawaii, U.S.A.
Registrar :	Mrs. Firdaus Ali M.A. (Economics)
Joint Registrar :	Ms. Suraiya Ahmad M.S. (Education)
Deputy Registrar :	Mr. Sk. Ruhul Amin B.Com.
Controller of Finance & Accounts :	Mr. Amal Krishna Das M. Com. A.C.A.
Deputy Librarian :	Mr. Shamsul Alam, M.A. (Library and Information Science)
Chairperson of Departments :	
Business Administration :	Dr. Md. Saleh Uddin Ph.D. (Economics) University of Malaya, Kuala Lumpur, M.A. (Economics) Chittagong University, M.A. in Economics, Thammasat University, Bangkok.
Computer Science & Engineering :	Mr. Syed Akhter Hossain B.Sc (Hons), First Class (First), Gold Medallist, M.Sc (Applied Physics & Electronics), Rajshahi University.
Economics :	Dr. Mohammed Farashuddin Ph.D (Economics) Boston University USA, MA (Economics) Boston University, MA (Economics) University of Dhaka, BA(Hons) Economics, University of Dhaka
English :	Dr. Md. Shahidullah Ph.D. (ELT), University of Pune, MA (ELT), Thames Valley University, London DIP TEFL, University of Sydney, Australia
Information and Communications	Dr. Mohamed Ruhul Amin
Engineering:	M.Sc. in Physics, Jahangirnagar University and Ph.D. in Appl. Math., University of St. Andrews, UK.
Mathematics and Physics :	Dr. Abu Saleh Abdun Noor M.Sc. in Mathematics, Rajshahi University, Ph.D., The Flinders University of South Australia, Adelaide, Australia.
Pharmacy :	Dr. M Tariqur Rahman Ph.D. in Biochemistry, Katholieke Universiteit Leuven, Belgium. M.Sc. in Biochemistry, KU Leuven, Belgium, M.Sc. in Microbiology, Dhaka University.
Proctor :	Mr. Kazi Khaled Shams Chisty MBA Columbia State University, USA.

Academic Programs

Graduation Requirements for Under Graduate Programs

Meeting the graduation requirements is the student's responsibility. The requirements include:

1. A minimum of 123-148 credits for a bachelor's degree, of which at least half must be earned at EWU in a degree program (residency requirement). Candidates for BA in English, BBA, and BSS in Economics degrees will be required to complete no less than 123 credits, and B.Sc. degree candidates majoring in Computer Science 130 credits and Computer Science and Engineering 143 credits, those majoring in Bachelor of Pharmacy 148 credits, and those majoring in Information and Communications Engineering 140 credits. Total credit requirement for graduation may change.

2. Completion of all course requirements for the degree/major.

3. A minimum CGPA of 2 will be required for graduation. The CGPA will be calculated on the basis of grades earned in the final examination of a course, wherever applicable.

4. On completion of all requirements, students must apply to the Registrar stating their intentions that they want to be considered for the award of the Bachelor degree in the relevant discipline.

5. No outstanding financial obligation to EWU.

6. All university properties must have been returned.

Fulfillment of the above conditions does not necessarily mean that a degree will be conferred on the student. The university reserves the right to refuse the awarding of a degree on disciplinary or similar grounds.

Minor Requirements

Undergraduate students are allowed to do one/more minor. The minor must be from departments other than his/her own. The minimum number of credits to be earned for a minor is 24. Students intending to do a minor must apply in writing to the Dean of Faculties for permission after completing 50% of courses with a minimum CGPA of 2.50 for his/her base degree. The minimum CGPA must be 2.00 to qualify for a minor.

To fulfill minor requirement one should successfully complete the following courses from the area in which s/he intends to do the minor. The student must take 2 (two) elective courses (6 credits) and 6 (six) core courses (18 credits).

Business Administration:

Core: ACT 311, BUS 231, ECO 101, ECO 102, FIN 101, FIN 355, ITB 301, and MIS 101; Elective: ACT 101, MGT 101, and MKT 101

English:

Core: ENG 145, ENG 154, ENG 155, ENG 190, ENG 195, ENG 208, ENG 230, and ENG 345; Elective: ENG 204, ENG 309, and ENG 302

Information and Communications Engineering:

Core: ICE 105, ICE 107, ICE 211, ICE 301, ICE 303, ICE 312, ICE 314 and ICE 412; Elective: ICE 414, ICE 415, and ICE 411

Computer Science and Engineering:

Core: CSE 105, CSE 107, CSE 205, CSE 207, CSE 245, CSE 301, CSE 380, and CSE 412; Elective: CSE 432, CSE 420, and CSE 480

Economics:

Core: ECO 102, ECO 200, ECO 310, ECO 328, ECO 349, ECO 360, ECO 475 and FIN 425; Elective: MAT 110, STA 101 and ECO 101

Bachelor of Arts (BA) in English

The general and specific Curriculum Objectives are:

General:

The general objectives are to help:

a) Promote liberal humanitarian values (through the study of masterpieces of English and American literature), non-native writings in English, cultural studies, post colonial studies etc.

b) Polish Refine and sensibilities and cultivate an urbanism in manner and behaviour of students to prepare them as successful future leaders/civil administrators.

c) Strengthen the moral fabric of students and develop their ability to distinguish the right from the wrong.

d) Promote the humanitarian cause in a materialistic world dominated by commercial motives.

Specific:

The major specific objectives of the English Department Curriculum are to help:

a) Develop an excellent communication skill in English, which is the gateway to success in professional life nowadays in the national and international settings.

b) Prepare good English language and literature teaching professionals to cater for the need of skilled English teachers at the tertiary level in Bangladesh, who will, in turn, help train teachers for secondary and primary levels.

c) Train students as course curriculum designers for effective English language program in the country.

d) Train students as English textbooks/material designers so that they can produce culture and context sensitive ELT materials.

e) Train students to design and mark English language tests so thay they can design and mark tests of English language and literature and also work as trainers and assessors of standard international English language tests like IELTS and TOEFL.

f) Develop translation skills (for translating our art literature and culture into English and translating foreign literature, art culture and good textbooks on different subjects from English to Bangla.

g) Impart knowledge and skills required for working with the media, e.g. as news editor in TV and as sub-editor in newspapers.

h) Impart training in creative writing in English so that through their own creative writings can familiarize foreign nationals with our culture.

To complete BA in English degree at EWU one has to successfully complete at least 123 credits. The courses that are offered for the English Department students are shown in the following page.

Language Lab: A Class in Progress

Bachelor of Arts (BA) in Englsish (ENG)

Minimum Requirement 123 Credits

Course	Title	Credits	Course	Title	Credits
General Requirements		33	ENG 306	Methodology of Language Teaching	3
Compulsory General Education Courses		18	ENG 309	Advanced Reading and Writing	3
BUS 101	Introduction to Business	3	ENG 310	Shakespeare	3
CSE 101	Introduction to Computers I	3	ENG 345	Romantic Poetry	3
ENG 100	Spoken English	3	ENG 420	American Literature (1620-1891)	3
ENG 101	Basic English	3	ENG 438	Literary Criticism	3
ENG 102	Composition and communication skills	3	Elective Requirements		30
GEN 201	Bangladesh Studies	3	*Students will select ten courses from one of the two concentrations*		
Optional General Education Courses		15			
Choose five courses from			*a) Concentration in Literature*		
CSE 102	Introduction to Computers II	3	ENG 210	Old and Middle English in Translation	3
GEN 202	Eastern Culture and Heritage	3	ENG 212	Classics in Translation	3
GEN 203	Ecological System and Environment	3	ENG 302	Modern Novels	3
GEN 205	Introduction to Psychology	3	ENG 330	English Prose from Bacon to Lamb	3
GEN 206	Introduction to Sociology	3	ENG 410	Continental Literature	3
GEN 207	Industrial Psychology	3	ENG 426	American Literature (Modern to Contemporary)	3
GEN 208	Introduction to Philosophy	3	ENG 430	Cultural Studies	3
GEN 209	Social Psychology	3	ENG 435	Postcolonial Theory and Literature	3
GEN 210	International Relation	3	ENG 440	Literary Theory	3
GEN 211	Concepts of Journalism and Media		ENG 445	Modern Poetry	3
Core Requirements		60	ENG 450	Modern Drama	3
ENG 145	Introduction to Linguistics	3	ENG 455	Comparative Literature	3
ENG 151	Advanced Grammar	3	*b) Concentration in Linguistics and ELT*		
ENG 154	English Phonetics and Phonology	3	ENG 204	Concept of ELT	3
ENG 155	Improving Reading and Writing Skills	3	ENG 206	Pragmatics & Discourse Analysis	3
ENG 190	Introduction to Literature	3	ENG 303	Syllabus and Material Design	3
ENG 195	Rhetoric and Prosody	3	ENG 316	English for Specific Purposes	3
ENG 205	History of the English Language	3	ENG 319	Translation Studies	3
ENG 207	Psycholinguistics	3	ENG 335	Teaching Language through Literature.	3
ENG 208	Socio linguistics	3	ENG 412	Techniques of Teaching English Language Skills	3
ENG 215	Seventeenth and Eighteenth Century Poetry	3	ENG 413	Language Testing and Evaluation	3
ENG 220	Victorian Prose and Poetry	3	ENG 414	Research Methodology in ELT	3
ENG 230	Nineteenth Century Novel	3	ENG 415	Language Policy and Planning	3
ENG 301	Elizabethan and Restoration Drama	3	ENG 417	Problems & Prospects of ELT in Bangladesh	3
ENG 305	Linguistic Theories	3	ENG 436	ELT Research Project	3

Note: If any student does not want to specialize in any of the two concentrations, s/he may take courses from both areas.

Bachelor of Business Administration (BBA)

Department of Business Administration at EWU, since its inception, has been offering undergraduate program in Business Administration with concentration in Accounting, Finance, International Business, Marketing, Management and Management Information System. Over the last two and half decades, the forces of globalization have produced radical transformation in the business world. Production, distribution and marketing of goods and services are increasingly becoming internationalized. Competition is becoming increasingly global. Every economy in the present day world is leaning more towards services, and quality is the initiative of many firms. Social responsibility is becoming a major concern for business. Demographic and lifestyle shifts are changing the way we shop, where we work, and how we live. The changes taking place today are forming the business world of the future. Our goal here in the Department of Business Administration at EWU is to provide students with an integrated and practical approach to understanding current business practices.

With the above goals in view, the program offers a standard curricula that cover the recent development in business as well as the areas that have traditionally formed the core of the business discipline. At present it offers a total of 93 courses, of which 18 are general education courses, 20 are core courses and the rest are from different concentration areas. The courses are so designed as to provide the students with opportunities and expertise to achieve successful career goals. The course curriculum is continuously updated to suit the needs of the market. Students are also required to do internship that helps expose them to practical world of corporate business.

More specifically we wish our students to attain a high level of skill in the following areas:

- View the market structure as a whole.
- Analyze marketing management problem.
- Use correct devices to solve any problems related to marketing management issues.
- Monitor local and global business, geopolitics and economic environment.
- Install and analyze MIS system within an organizational setting.
- Understand investment and portfolio management, management of financial institutions, corporate finance, international financial management, insurance and risk management and derivative securities.
- Apply accounting principles, install and operate accounting system, have knowledge about legal framework of accounting for different types of organization, handle cost and management accounting techniques.

The main strength of the program lies in its highly skilled and dedicated faculty members. We have the highest number of full time faculty members among all private universities in the country. Of the 39 full-time faculty members at present, six are full professors with long experience of teaching at university level. Twelve have Ph.D. degree from reputed universities at home and abroad.

To complete BBA degree at EWU one has to successfully complete at least 123 credits. The courses that are offered for the BBA students are shown in the following page.

A BBA Class in Progress

Bachelor of Business Administration (BBA)
Minimum Requirement 123 Credits

Course	Title	Credit
General Requirements		33
Compulsory General Education Courses		24
BUS 101	Introduction to Business	3
CSE 101	Introduction to Computers I	3
ENG 100	Spoken English	3
ENG 101	Basic English	3
ENG 102	Composition and communication skills	3
GEN 201	Bangladesh Studies	3
MAT 110	Mathematics For Business and Economics I	3
STA 101	Introduction to Statistics	3
Optional General Education Courses		9
Choose three courses from		
CSE 102	Introduction to Computers II	3
GEN 202	Eastern Culture and Heritage	3
GEN 203	Ecological System and Environment	3
GEN 204	Western Thought	3
GEN 205	Introduction to Psychology	3
GEN 206	Introduction to Sociology	3
GEN 207	Industrial Psychology	3
GEN 208	Introduction to Philosophy	3
GEN 209	Social Psychology	3
GEN 210	International Relation	3
Core Requirements		60
ACT 101	Financial Accounting	3
ACT 201	Management Accounting	3
BUS 231	Business Communication	3
BUS 361	Legal environment of Business	3
ECO 101	Principles of Microeconomics	3
ECO 102	Introduction to Macroeconomics	3
FIN 101	Principles of Finance	3
FIN 201	Business Finance	3
ITB 301	International Business	3
MAT 311	Mathematics for Business and Economics II	3
MGT 101	Principles of Management	3
MGT 251	Organizational Behavior	3
MGT 337	Production Operations Management	3
MGT 409	Human Resources Management	3
MGT 480	Strategic Management	3
MIS 101	Introduction to Management information system	3
MIS 305	Enterprise Information System	3
MKT 101	Principles of Marketing	3
MKT 201	Marketing Management	3
STA 327	Statistics For Business And Economics	3
Concentration Requirements		18
Students may be allowed to do concentration in two areas		
a) Concentration in Accounting		
ACT 311	Taxation	3
ACT 411	Intermediate Accounting-I	3
ACT 421	Intermediate Accounting-II	3
ACT 441	Cost Accounting	3
Choose two courses from		
ACT 427	Auditing	3
ACT 430	Accounting Information System	3
ACT 456	Accounting Theory	3
ACT 478	Advanced Accounting	3
b) Concentration in Finance		
FIN 425	Investment Analysis and Management	3
FIN 435	Managerial finance	3
FIN 465	International Financial Management	3
Choose three courses from		
ACT 311	Taxation	3
FIN 335	Financial Institutions and Markets	3

Course	Title	Credit
FIN 350	Real Estate Finance	3
FIN 380	Management of Commercial Bank	3
FIN 408	Financial Analysis and Control	3
FIN 410	Risk Management and Insurance	3
FIN 450	Cases in Financial Management	3
FIN 475	Option and Future	3
c) Concentration in International Business		
ITB 401	International Operations	3
ITB 428	International Economics	3
ITB 465	International Financial Management	3
Choose three courses from		
ITB 445	International Financial Institution	3
ITB 450	International Business Negotiations	3
ITB 455	Country Risk Analysis	3
ITB 460	International Competitiveness	3
MKT408	International Marketing	3
d) Concentration in Management		
MGT 402	Management Science	3
MGT 421	Entrepreneurship Development	3
MGT 465	Leadership Management	3
Choose three courses from		
MGT 405	Organizational Development and Change	3
MGT 410	International Labor Management	3
MGT 425	Total Quality Management	3
MGT 437	Small Business Management	3
MGT 448	Managing Globalization	3
e) Concentration in Management Information System		
MIS 401	Structural Programming	4
MIS 402	System Analysis and Design	3
MIS 404	Networking and Operating System	3
MIS 406	Relation Database Management System	3
Choose two courses from		
CSE 107	Object Oriented Programming	4
CSE 301	Database Systems	4
MIS 407	System Integration & Security and Internet	3
MIS 408	Internetworking with TCP/IP & Imple. Exc. Serv.	3
MIS 409	Client/Server Administration	3
MIS 415	Decision Support System	3
MIS 419	E-Commerce and Web Programming	3
f) Concentration in Marketing		
MKT 410	Consumer Behavior	3
MKT 414	Marketing Research	3
Choose four courses from		
MKT 401	Sales Management	3
MKT 405	Promotion Management	3
MKT 408	International Marketing	3
MKT 412	Service Marketing	3
MKT 416	Brand Management	3
MKT 418	Physical Distribution	3
MKT 430	Strategic Marketing	3
Open Electives		9
Students must take three 300/400 level courses as open electives to qualify for the BBA degree. Students can choose any 300/400 level course from BA, and/or CSE, and/or CIT, and/or ENG department. Students will not be allowed to take the following two courses as open elective course: CIT 301 (Network Technology) and CIT 403 (Local Area Network). Students must complete relevant prerequisite courses to qualify for enrollment into these open elective courses. Students willing to enroll into open elective courses of other departments must consult with the chairpersons and course instructors concerned.		
Internship/Project Work		3
Choose one course from		
BUS 498	Project Work	3
BUS 499	Internship	3

Bachelor of Science (B.Sc.) in Information & Communications Engineering (ICE)

Information and Communications Engineering (ICE) is the subject of creation, gathering, processing, storage, and delivery of information and the creation of communication devices and systems that allow these to happen. Naturally, telecommunications engineering is the main field that falls under this category. Our civilizations now depend absolutely upon ICE. The Internet and the World Wide Web are perhaps the most visible applications of ICE. Applications include satellite communications, next generation mobile phones, digital high definition television, and video on demand systems replacing videotape libraries, air traffic control, car and aircraft navigation systems, medicine, and even the production of network based computer games.

B.Sc. in ICE is designed to equip its graduates for careers in the design, development and management of information networks. These can range from small company local area networks (LANs) to the global telephone and Internet networks, which are now converging towards a single entity. The program is very much concerned with the essential (but usually invisible) backbone or infrastructure of data communications systems that connects all the phones, faxes, computers and other multimedia services, some of which do not yet exist.

This curriculum for the undergraduate degree program is based on the believe that in a discipline that is changing at a rapid pace, it is necessary to provide the students with intellectual rather than only technical skills. Accordingly, the curriculum is based on a broad coverage of the disciplines of Electrical, Computer and Telecommunications Engineering and specialization can be provided by a choice of subjects in the final year and in the final year project work or industrial training. The objective of the course curriculum is to provide engineering graduates with the disciplines and skills needed to design modern communications systems.

It should be mentioned here that, B.Sc. program in ICE should be equivalent to the B.Sc. in the following disciplines of other universities of the country:

Electronics and Communications Engineering (ECE),

Applied Physics and Electronics (APE),

Electronics and Telecommunications Engineering (ETE),

Information and Communications Technology (ICT).

Information and communications engineering and the closely related area of computer systems engineering are projected to have strong and accelerating employment growth for the foreseeable future. Career prospects for the graduates in this field are excellent.

Goals of the B.Sc. in ICE

- This undergraduate curriculum is designed in such a way that after graduation the graduates will have a reasonable amount of general idea about humanities subjects and they will obtain a good communication skill in English as well. The curriculum includes a good number of optional general education courses from which students can choose the required number of courses according to her/his interest. Examples of some of the general courses are: psychology, sociology, philosophy, international relations, journalism and media studies. In addition to these, a student must take a basic business course and a course from non-engineering subjects.

- To study science and engineering in advanced levels, one needs to acquire a good knowledge in mathematics and physics. Our curriculum contains quite a few number of basic and fundamental mathematics and physics courses. For example, this curriculum includes the following courses on mathematics and statistics: statistics and probability, calculus and vector analysis, differential equations and special functions, linear algebra, complex variables and mathematical transforms. It also includes two courses on physics: a basic physics course containing waves and oscillations, electricity and magnetism and physical optics; and the other course is a modern physics course which includes quantum mechanics, atomic physics, and fundamentals of solid state and nuclear physics.

- To study telecommunications engineering in depth, a thorough knowledge in electronic devices and circuits is a must. The present curriculum includes a reasonable number of electronics courses. This curriculum includes the following electronics courses: electric circuits and networks, basic electronics & devices, electronic circuits, digital electronics and a course on microprocessors and interfacing.

- In recent years, modern telecommunications engineering has been merged with computer

systems engineering. In our curriculum, we have included almost all-basic computer science courses, such as structured programming, object oriented programming, discrete math and numerical methods, data structure and algorithm, computer organization and operating systems, database systems etc. So that our graduates can work in computer systems industries as well.

- Digital signals processing is very important for telecommunications. We cover a vast syllabus on signals and systems as a core course. We have also included an advanced course on this subject in the final year of the curriculum.

- In the present time, wireless and mobile communication is a rapidly growing field. Because of the rapid growth in the industry, we have included a course detailing almost all-current topics of this subject including IMT 2000. Although this subject is usually taught in masters or higher levels but we have included it in our undergraduate curriculum because of the market demand.

- In the present curriculum, we have included quite a few number of need based advanced courses in computer science and telecommunications. For example, we have courses like artificial intelligence and expert systems, neural networks, VLSI engineering, robotic technology, broadband networks and multimedia communications technology. These courses are having greatest impact in the science of computer systems engineering as well as in modern telecommunications engineering.

- Students will also undertake an extensive project work or industrial training in the final year of their study. This project work or industrial training is a key element of the program, which will give the students the opportunity to put the knowledge and skills they have acquired into practice.

- The curriculum is designed in such a way that a student first obtains a general foundation in information and communications engineering by studying basic courses on computer science and telecommunications. Then she/he can prefer to go for either in the computer systems engineering or in the telecommunications engineering in depth by studying relevant advanced courses included in the elective course module. However, since our curriculum is designed to include almost all basic and fundamental courses of the two streams, a graduate of this curriculum will be appropriate to work in firms related to computer systems as well as telecommunications engineering.

Responsibilities

ICE engineers are responsible for the planning and design, commissioning, performance monitoring, optimization and management of complex telecommunications system. Some important activities of an ICE engineer are

- Management of engineering teams

- Design and implementation of telecommunications equipments like modems, switches, routers and radio links

- Developing real-time computer systems including imbedded computer systems and their software

Inauguration of VSAT System

- Building and testing prototypes of new equipment including integrated circuit components
- Predicting telecommunication system performance based on simulation of real-life environment
- Taking action to optimize the performance of telecommunications systems
- Providing technical support to marketing or customer service staff and telecommunications technicians
- Providing training for technical and engineering staff once new systems have been installed
- Supervising special research projects on next generation telecommunications systems
- To synchronize themselves to the radical changing technology of telecommunications.

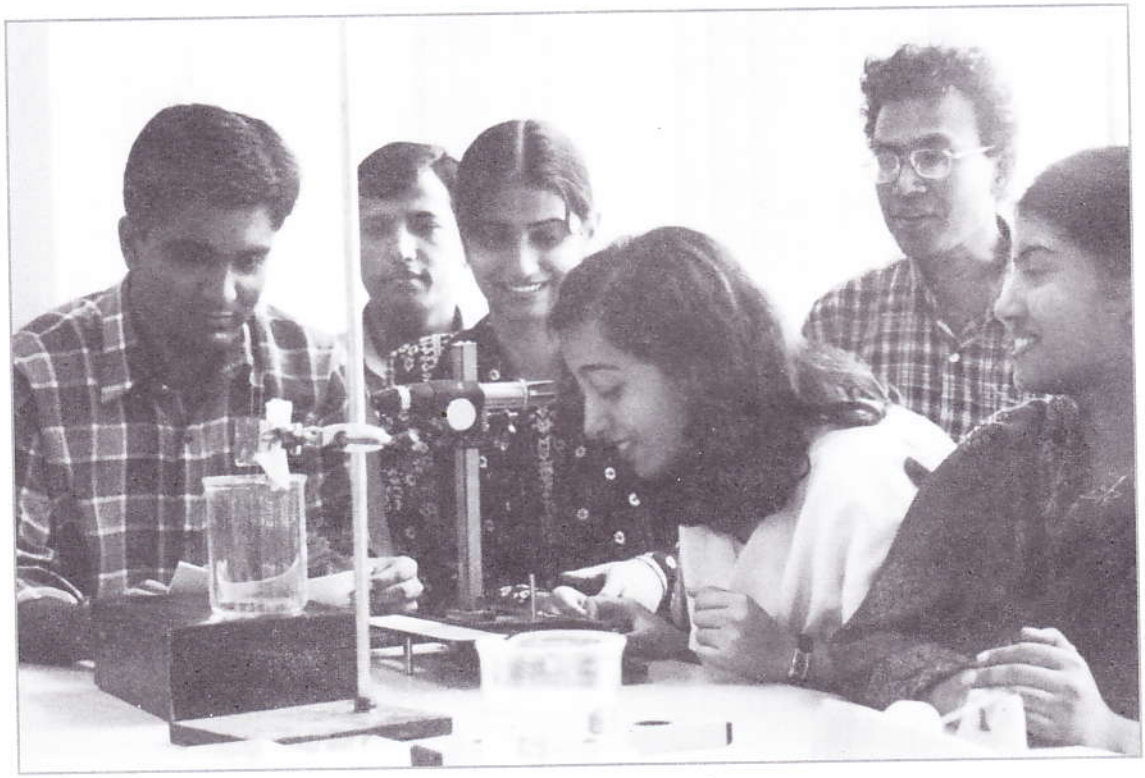
Employment Opportunities for the ICE Graduates

- Mobile operators, for example: City Cell, GrameenPhone, AKTEL, Sheba Telecom etc. and other relevant multinational companies abroad
- BTTB; the graduates can complete BCS examination for relevant government jobs
- Military EME corpse
- Any organization related to computer networking and IT, such as software firms, ISPs, banking systems etc.
- Different electronics industries, such as television and radio manufacturers and other related firms
- Teaching positions for electronics, computer science and telecommunications related courses.

Total credit hours of the curriculum are 140 and the credit distributions are described below:

a.	General Requirements	24
b.	Core Courses	98
c.	Elective Courses	15
d.	Project Work/Industrial Training	03
		140

The courses that are offered for the ICE students are shown in the following page.



Students in the Physics Lab

Bachelor of Science (B.Sc.) in Information & Communications Engineering (ICE)
Minimum Requirement 140 Credits

Course	Title	Credits	Course	Title	Credits
General Requirements		24	MAT 301	Complex Variables & Mathematical Transforms	3
Compulsory General Education Courses		15	PHY 101	Basic Physics	4
BUS 101	Introduction to Business	3	PHY 102	Modern Physics	4
ENG 100	Spoken English	3	STA 102	Statistics & Probability	3
ENG 101	Basic English	3	Elective Courses		15
ENG 102	Composition and communication skills	3	Courses from ICE or other Engineering Subjects		
GEN 201	Bangladesh Studies	3	Choose four courses from		12
Optional General Education Courses		9	ICE 402	Web Page Development & Management	3
Choose three courses from			ICE 403	System Analysis & Design	3
GEN 202	Eastern Culture and Heritage	3	ICE 404	Software Engineering	3
GEN 203	Ecological System and Environment	3	ICE 405	Communications Languages & Software	3
GEN 205	Introduction to Psychology	3	ICE 406	Telecommunications Hardware/ Software Interface	3
GEN 206	Introduction to Sociology	3	ICE 410	Optoelectronics & Photonics	3
GEN 208	Introduction to Philosophy	3	ICE 411	Digital Signal Processing	3
GEN 210	International Relation	3	ICE 414	Optical Communications	3
GEN 211	Concepts of Journalism & Media Studies	3	ICE 415	Satellite Communications	3
Core Requirements		98	ICE 417	Artificial Intelligence & Expert Systems	3
ICE 105	Computer Fundamentals & Programming Language	4	ICE 419	Digital Image Processing	3
ICE 107	Object Oriented Programming with C++	4	ICE 421	Error Control Coding	3
ICE 206	Discrete Mathematics & Numerical Methods	3	ICE 424	VLSI Engineering	3
ICE 208	Data Structure & Algorithm	4	ICE 425	VLSI for Telecommunications	3
ICE 211	Electrical Circuits & Networks	4	ICE 426	Neural Networks & Applications	3
ICE 212	Basic Electronics & Devices	4	ICE 427	Computer Graphics & Visualizations	3
ICE 214	Electronic Circuits	4	ICE 428	Robotic Technology	3
ICE 301	Database Management Systems	4	ICE 430	Communications & Network Security	3
ICE 303	Signals & Systems	4	ICE 431	Broadband Networks	3
ICE 310	Electromagnetic Theory	3	ICE 432	Multimedia Communications Technology	3
ICE 311	Digital Electronic Circuits	4	ICE 435	Antenna Engineering	3
ICE 312	Analog Communications	3	Courses from non-Engineering Subjects		
ICE 314	Digital & Data Communications	4	Choose one course from		3
ICE 320	RF & Microwave Engineering	4	ACT 101	Financial Accounting	3
ICE 325	Computer Organization & Operating Systems	3	ECO 103	Principles of Economics	3
ICE 327	Network Programming with JAVA	4	FIN 101	Principles of Finance	3
ICE 412	Wireless & Mobile Communications	4	MGT 101	Principles of Management	3
ICE 416	Microprocessors & Interfacing	4	MKT 101	Principles of Marketing	3
ICE 418	Computer Communications & Networks	4	Project Work/Industrial Training		3
ICE 423	Telecommunications Networks & Switching	3	Choose one course from		
MAT 101	Calculus & Vector Analysis	3			
MAT 102	Differential Equations & Special Functions	3	ICE 498	Project Work	3
MAT 201	Linear Algebra	3	ICE 499	Industrial Training	3

Bachelor of Science (B.Sc.) in Computer Science and Engineering (CSE)

Department of Computer Science and Engineering at EWU, since its inception, has been offering undergraduate program in Computer Science and later on introduced Computer Science and Engineering with more focus on ICT industry worldwide. Computer Science and Engineering (CSE) delivers the fundamental skills needed to become a Computer Scientist. It is the aim of the BSc in Computer Science and Engineering to give you a wide application of the subject, rather than just an understanding of existing commercial approaches, so that your understanding and knowledge can adapt and evolve to match the skills that will be required in the coming century. The degree is designed for a wide range of students, including those who wish to pursue a career in software engineering or computer programming, based on strong technical competence in software system design and interfacing, and also those who wish to move on to study for higher degrees in the computing and information technology area.

The primary objectives of the curriculum are to ensure that every graduate is thoroughly familiar with the fundamental principles of modern computer science and computing systems in general; understands how these principles relate to software, hardware and systems design; and is familiar with at least one significant area of applications of computers. Other major objectives include: providing graduates with the ability to comprehend a variety of problem-solving algorithms; familiarity with several programming languages for implementing these algorithms; understanding of hardware and/or software systems; the ability to make informed choices of software and hardware for a variety of problems; and an understanding of the role that human factors play in implementing computer-based systems.

B.Sc. in CSE is designed to equip its graduates with the knowledge and skills required by the ICT industry. Special emphasis is given in the systems design and architecture. The students gain industry knowledge throughout their studied in the CSE program. The CSE department has strong inclination towards research and development and every semester students are participating as the co-author with the faculty members in publication of journal papers of international standard. The CSE department is hosting on regular basis seminars and talks on research areas in order to create interest among the students and bringing them for the joint research initiatives in the future.

Program Objectives

A graduate of the Computer Science and Engineering Program will be able to:

- Demonstrate competence by creating a variety of problem-solving algorithms for moderately complex problems;
- Demonstrate competence by implementing algorithms in at least two modern programming languages;
- Explain the software development process and the software life cycle and demonstrate competence in the use of procedures and common tools for software development maintenance;
- Explain the organization of the computer science discipline and be able to demonstrate proficiency of at least one area of specialization (computer applications, computer systems or software engineering or Logic Design);
- Explain the organization of the hardware and software subsystems that comprise modern computing systems and provide analysis of how system organization impacts the selection of algorithms and programming languages;
- Point to significant personal experiences as a member of a team developing substantial non-academic computer-related projects.

Final Year Project

The CSC499 / CSE499 Course Project is the core element of the undergraduate studies. It consists of studies and research on a topic derived from the field of interest. The project is chosen in the final year of the study.

The research of the project work is carried out during your final year study based on the identification of the appropriate sources and methods. The project individual/group will come up with a report on the project work to present before the project assessors on the scheduled project defense date.

The course project draws together knowledge acquired in different areas of your study as well as utilizing your skills developed during your stay with the department.

Selection of Topic and Preparation

In the course of the study, student need to give careful thought to identify the area of interest. This not only drives students towards the right selection of topic for the project but at the same time student gain understanding on the inner facts of the problem that s/he may address in the project work. The research seminars and the workshops help student to identify an area of the current research activities and guide you on the formulation of the problem area.

Working on the Project

In the course of your project work, student should be able to devote a large amount of time to the progress of the work. Student will require frequent discussions with the project advisor to prepare background during the early stage of the project.

Presentation and Submission

Supervision and Feedback

During consultation with the supervisor, student should discuss outstanding problems and questions of revision, style and presentation. S/he should ask supervisor to read and to comment upon a draft version of the project and on the outline of the project presentation for the defense.

Final Version of the Project

The final version of the project work should be completed with the style and structure of the discussion during draft revision of the work with the supervisor.

Length and Format

The department provides necessary guideline on the format of the project report along with other important deadlines.

To complete CSE degree at EWU one has to successfully complete at least 143 credits. The courses that are offered for both the CSC and CSE students are shown in the following page.

Reception for EWU Computer Programming Team

Bachelor of Science (B.Sc.) in Computer Science (CSC)
Minimum Requirement 130 Credits

Course	Title	Credit
General Requirements:		24
Compulsory General Education Courses		15
BUS 101	Introduction to Business	3
ENG 100	Spoken English	3
ENG 101	Basic English	3
ENG 102	Composition and Communication skills	3
GEN 201	Bangladesh Studies	3
Optional General Education Courses		9
Choose three courses from		
GEN 202	Eastern Culture and Heritage	3
GEN 203	Ecological System and Environment	3
GEN 204	Western Thought	3
GEN 205	Introduction to Psychology	3
GEN 206	Introduction to Sociology	3
GEN 207	Industrial Psychology	3
GEN 208	Introduction to Philosophy	3
GEN 209	Social Psychology	3
GEN 210	International Relation	3
Core Requirements		88
CSE 105	Structured Programming	4
CSE 107	Object Oriented Programming	4
CSE 205	Discrete Mathematics	3
CSE 207	Data Structure	4
CSE 225	Numerical Methods	3
CSE 245	Algorithms	4
CSE 252	Basic Electronics	4
CSE 255	Digital Logic Design	4
CSE 275	Operating Systems	3
CSE 301	Database Systems	4
CSE 350	Data Communications	3
CSE 360	Computer Architecture	3
CSE 405	Computer Networks	3
CSE 409	Systems Programming	3
CSE 410	Artificial Intelligence	3
CSE 411	Software Engineering	3
CSE 412	Programming with JAVA	4
CSE 420	Computer Graphics	3
CSE 430	Compiler Design	3

Course	Title	Credit
CSE 498	Social and Professional Issues in Computing	3
MAT 101	Calculus & Vector Analysis	3
MAT 102	Differential Equations & Special Functions	3
MAT 201	Linear Algebra	3
STA 101	Introduction to Statistics	3
PHY 101	Basic Physics	4
PHY 102	Modern Physics	4
Elective Courses		15
(a) From Computer Science Courses Choose Three Courses from		9
CSE 401	Information System Analysis and Design	3
CSE 413	Automata Theory and Theory of Computations	3
CSE 415	Software Development Project	3
CSE 422	Simulation and Modeling	3
CSE 444	Fault Tolerant Computing	3
CSE 452	Distributed Systems and Algorithms	3
CSE 460	Programming Language Principles	3
CSE 464	Advanced Database System	3
CSE 470	Expert System	3
CSE 474	Pattern Recognition	3
CSE 476	Neural Networks	3
CSE 478	Stochastic Processes	3
CSE 480	Web Database Programming	3
CSE 482	Parallel Computation	3
CSE 484	Computational Geometry	3
From Non Computer Science/ Engineering Courses: (b) Choose Two courses from		6
ACT 101	Financial Accounting	3
ECO 101	Principles of Microeconomics	3
ECO 102	Introduction to Macroeconomics	3
FIN 101	Principles of Finance	3
MGT 101	Principles of Management	3
MGT 337	Production Operations Management	3
MIS 101	Introduction to Management information system	3
MKT 101	Principles of Marketing	3
MKT 201	Marketing Management	3
Internship/Project		3
CSE 499	Internship/Project	3

Bachelor of Science (B.Sc.) in Computer Science and Engineering (CSE)
Minimum Requirement 143 Credits

Course	Title	Credit	Course	Title	Credit
General Requirements:		24	MAT 201	Linear Algebra	3
Compulsory General Education Courses		15	MAT 301	Mathematics for Engineers	3
BUS 101	Introduction to Business	3	STA 101	Introduction to Statistics	3
ENG 100	Spoken English	3	PHY 101	Basic Physics	4
ENG 101	Basic English	3	PHY 102	Modern Physics	4
ENG 102	Composition and communication skills	3	Elective Courses		15
GEN 201	Bangladesh Studies	3	From Computer Science/Engineering Courses:		9
Optional General Education Courses		9	Choose three courses from		
Choose three courses from			CSE 401	Information System Analysis and Design	3
GEN 202	Eastern Culture and Heritage	3	CSE 409	Systems Programming	3
GEN 203	Ecological System and Environment	3	CSE 413	Automata Theory and Theory of Computations	3
GEN 204	Western thought	3	CSE 415	Software Development Project	3
GEN 205	Introduction to Psychology	3	CSE 420	Computer Graphics	3
GEN 206	Introduction to Sociology	3	CSE 422	Simulation and Modeling	3
GEN 207	Industrial Psychology	3	CSE 425	Electrical Technology	3
GEN 208	Introduction to Philosophy	3	CSE 432	Digital Signal Processing	3
GEN 209	Social Psychology	3	CSE 434	Digital Image Processing	3
GEN 210	International Relation	3	CSE 436	Advanced Computer Architecture	3
Core Requirements		101	CSE 438	Digital Computer Design	3
CSE 105	Structured Programming	4	CSE 444	Fault Tolerant Computing:	3
CSE 107	Object Oriented Programming	4	CSE 452	Distributed Systems and Algorithms	3
CSE 109	Electrical Circuits	4	CSE 470	Expert Systems	3
CSE 205	Discrete Mathematics	3	CSE 474	Pattern Recognition	3
CSE 207	Data Structure	4	CSE 476	Neural Networks	3
CSE 225	Numerical Methods	3	CSE 478	Stochastic Processes	3
CSE 245	Algorithms	4	CSE 480	Web Database Programming	3
CSE 251	Electronic Devices and Circuits	4	CSE 482	Parallel Computation	3
CSE 255	Digital Logic Design	4	CSE 484	Computational Geometry	3
CSE 275	Operating Systems	3	CSE 490	VLSI Design	3
CSE 301	Database Systems	4	CSE 492	Robotics	3
CSE 350	Data Communications	3	From Non Computer Science/Engineering Courses:		6
CSE 360	Computer Architecture	3	Choose two courses from		
CSE 370	Electrical Measurement and Instrumentation	4	ACT 101	Financial Accounting	3
CSE 380	Digital Electronics	4	ECO 101	Principles of Microeconomics	3
CSE 405	Computer Networks	3	ECO 102	Introduction to Macroeconomics	3
CSE 410	Artificial Intelligence	3	FIN 101	Principles of Finance	3
CSE 411	Software Engineering	3	MGT 101	Principles of Management	3
CSE 412	Programming with JAVA	4	MGT 337	Production Operations Management	3
CSE 430	Compiler Design	3	MIS 101	Introduction to Management information system	3
CSE 442	Microprocessors and Microcomputers	4	MKT 101	Principles of Marketing	3
CSE 498	Social and Professional Issues in Computing	3	MKT 201	Marketing Management	3
MAT 101	Calculus & Vector Analysis	3	Internship/Project		3
MAT 102	Differential Equations & Special Functions	3	CSE 499	Internship/Project	3

Bachelor of Social Science (BSS) in Economics (ECO)

Economics is a fascinating and important subject. With a good grasp over the discipline one can wield a powerful set of tools capable of systematically addressing issues ranging from national policies to ones professional and personal life and capable of affecting – for better or worse-- the lives of million around the world. However the crucial core of the discipline is far from fixed. A relatively quiet revolution has been sweeping the world – the globalization of economic activity and with that has been expanding the frontier of the knowledge of the subject.

Our Bachelor of Social Science(BSS) in Economics program is designed in a way that students will find interesting, exciting and relevant. The program offers a standard curricula that covers the recent development in Economics as well as the areas that have traditionally formed the core of the discipline. The total number of courses offered under this program is 62, of which 15 are general education courses, 21 are core courses and the rest are concentration courses. The undergraduate program in economics offers concentration in Business Economics, Advanced Economic Theory and Trade and Development. A student is allowed to do concentration in two areas only.

The courses offered for the BSS(ECO) degree are described below:

EWU Business Club Receives Autoline NSU National Entrepreneurs' Fair Trophy 2003

Bachelor of Social Science (BSS) in Economics (ECO)
Minimum Requirement 123 Credits

Course	Title	credit	Course	Title	credit
General Requirements		33	MAT 201	Linear Algebra	3
Compulsory General Education Courses		24	MAT 311	Mathematics for Business and Economics II	3
BUS 101	Introduction to Business	3	STA 327	Statistics For Business And Economics	3
CSE 101	Introduction to Computers I	3	Concentration Courses		15
ENG 100	Spoken English	3	a) Concentration in Business Economics		
ENG 101	Basic English	3	Choose five courses from		
ENG 102	Composition and communication skills	3	ACT 101	Financial Accounting	3
GEN 201	Bangladesh Studies	3	FIN 425	Investment Analysis and Management	3
MAT 110	Mathematics For Business and Economics I	3	FIN 465	International Financial Management	3
STA 101	Introduction to Statistics	3	ITB 301	International Business	3
Optional General Education Courses		9	MGT 101	Principles of Management	3
Choose three courses from			MGT 337	Production Operations Management	3
CSE 102	Introduction to Computers II	3	MKT 101	Principles of Marketing	3
GEN 202	Eastern Culture and Heritage	3	MKT 408	International Marketing	3
GEN 203	Ecological System and Environment	3	b) Concentration in Advanced Economic Theory		
GEN 204	Western thought	3	Choose five courses from		
GEN 205	Introduction to Psychology	3	ECO 357	Mathematical Economics	3
GEN 206	Introduction to Sociology	3	ECO 447	Applied Economics	3
GEN 207	Industrial Psychology	3	ECO 449	Economics of information	3
Core Requirements		60	ECO 467	Advanced Microeconomic Theory	3
ECO 101	Principles of Microeconomics	3	ECO 474	Mathematical Economics II	3
ECO 102	Introduction to Macroeconomics	3	ECO 477	Advanced Macroeconomic Theory	3
ECO 200	Agricultural Economics	3	ECO 487	Econometric Methods	3
ECO 214	Public Sector Economics	3	MAT 407	Advanced Calculus	3
ECO 260	Env. & Natural Resource Economics	3	MAT 470	Real Analysis	3
ECO 301	Intermediate Microeconomic Theory	3	STA 427	Mathematical Statistics	3
ECO 302	Intermediate Macroeconomic Theory	3	c) Concentration in Trade and Development		
ECO 304	Economics of Health	3	Choose five courses from		
ECO 310	Money and Banking	3	ECO 304	Economics of Health	3
ECO 328	International Trade and Finance	3	ECO 329	Contemporary Issues in International Economics	3
ECO 349	Economics of Development	3	ECO 353	Economics of Development in South Asia	3
ECO 360	Socio-Economic Profiles of Bangladesh	3	ECO 406	International Economic Theory	3
ECO 450	Labor Economics	3	ECO 414	Trade Policy Analysis	3
ECO 460	Managerial Economics	3	ECO 433	Gender & Development	3
ECO 465	Basic Econometrics	3	ECO 443	Social Mobilization, Rural Banking and Community Organization	3
ECO 475	History of Economic Thought	3	FIN 465	International Financial Management	3
ECO 480	Urban Economics	3	Open Electives		15
ECO 490	Industrial Organization	3	Choose five courses from 300 or 400 levels		

Bachelor of Pharmacy (B. PHRM)

The demand for pharmacy graduates continues both within the pharmaceutical industries and academic/research institutions nationwide and in abroad. Recent advances in pharmaceutical sciences are occurring at a very rapid pace due to the latest developments in genetic engineering. This new scientific activity has greatly increased the number of research positions available to pharmacy graduates in the biotechnology industry.

Pharmaceutical Science is a subject that integrates knowledge of biochemistry, cell and molecular biology, physiology and chemistry to study the relationship between biological processes and therapeutic agents. Pharmacists investigate the effects and mechanism of action of drugs and chemical agents with living organisms. The areas of pharmacy are many and diverse, and include the therapeutic and toxicological actions of drugs on humans, animals and microorganisms, the influence of chemicals upon the environment and biological ecosystems, and the use of drugs as research tools for the elucidation of molecular and biochemical mechanisms.

Program

The Bachelor of Pharmacy of the East West University is a four year program divided into 12 semesters (3 semesters per year) requiring completion of 148 credits. The program is designed to ensure that the students are provided both theoretical and practical knowledge essential for a successful career in the future

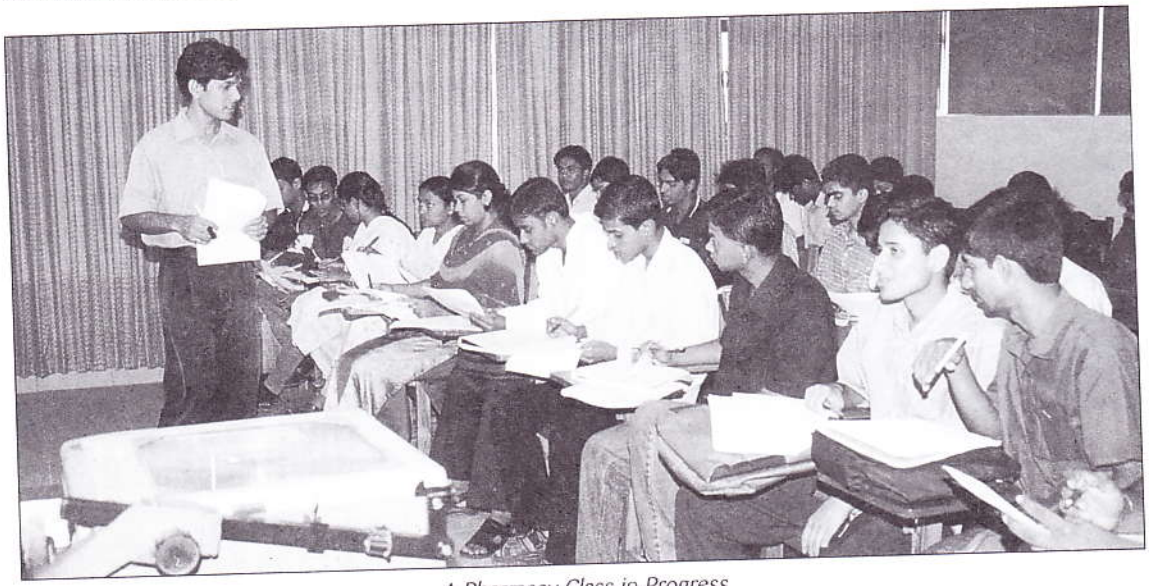
Laboratory

There are at least 15 laboratory courses and a research project to be carried our by the undergraduate students of the Pharmacy Deaprtment. These require modern laboratory facilities. Current laboratory facilities include advance instruments like UV-Visible spectrophotometer, Thermocycler for PCR, ELISA, high resolution microscope, fundamental chromatographic instruments, necessary equipments for microbiological experiments, pharmaceutics and pharmacology. Separate laboratory arrangements are available for conducting research by both faculty members and students.

Admission Requirements

In addition to the minimum general admission criteria for EWU, students should have Chemistry at HSC or equivalent level to be qualified for admission to B. Pharm. program.

The courses offered for the Bachelor of Pharmacy (B.PHARM) degree are listed below:



A Pharmacy Class in Progress

Bachelor of Pharmacy (B. PHRM)
Minimum Requirement 148 Credits

Course No. + Course Name	Credits	Prerequisite
BUS 101: Introduction to Business	3	None
CSE 101: Introduction to Computers	3	None
ENG 100: Spoken English	3	None
ENG 101: Basic English	3	ENG 099
ENG 102: Composition and Communication Skills	3	ENG 101
MAT 101: Calculus and Vector Analysis	3	None
PHRM 099: Remedial Biology	0	None
PHRM 101: Physical Pharmacy I	2 + 1	None
PHRM 102: Cell and Developmental Biology	2	None
PHRM 103: Organic Pharmacy	2 + 1	None
PHY 102: Modern Physics	3	None
Any three general courses (of 3 credits) offered by EWU	(3 × 3) =	9
GEN 201: Bangladesh Studies	3	ENG 102
PHRM 201: Human Physiology	2 + 1	PHRM 102
PHRM 202: Basic Microbiology	2	None
PHRM 203: Pharmaceutical Analysis	2 + 1	MAT 104
PHRM 204: Physical Pharmacy II	2 + 1	PHRM 101
PHRM 205: Biomolecular Pharmacy	2	None
PHRM 206: Biochemistry	2	PHRM 101, PHRM 103, PHRM 205
PHRM 207: Pharmacognosy	2 + 1	None
PHRM 208: Metabolism and Endocrinology	3	PHRM 206
PHRM 209: Statistics for Pharmaceutical Sciences	2	MAT 104
PHRM 210: Agro-pharmaceuticals**	2	None
PHRM 211: Industrial Pharmacy	2	None
PHRM 212: Pharmacology I	2 + 1	PHRM 201, PHRM 207
PHRM 213: Cosmetology	2	None
PHRM 301: Medicinal Chemistry I	2 + 1	PHRM 207
PHRM 302: Human Morphology	2	None
PHRM 303: Medicinal Chemistry II	2 + 1	PHRM 207
PHRM 304: Immunology	2 + 1	PHRM 201, PHRM 202, PHRM 205
PHRM 305: Pharmaceutical Microbiology	2 + 1	PHRM 202
PHRM 306: Pharmacology II	2 + 1	PHRM 212
PHRM 307: Therapeutics	3	PHRM 302, PHRM 306
PHRM 308: Pharmaceutics I	3	PHRM 307
PHRM 309: Diagnostic Imaging**	2	PHY 102, PHRM 203
PHRM 310: Applied Nuclear Pharmacy**	2	PHY 102, PHRM 101
PHRM 311: Pharmacodynamics and Pharmacokinetics	2 +1	PHRM 308
PHRM 312: Veterinary Pharmacology**	2	PHRM 306
PHRM 313: Antimicrobial and Anticancer Drugs	2	PHRM 305,PHRM 306
PHRM 314: Spectroscopy and X-ray Crystallography	2	PHRM 203
PHRM 315: Hospital Pharmacy	2	PHRM 304, PHRM 306, PHRM 307
PHRM 401: Molecular Biology	2 + 1	PHRM 205
PHRM 402: Toxicology of Drug and Related Products	2 + 1	PHRM 303
PHRM 403: Community Pharmacy	2	PHRM 315
PHRM 404: Pharmaceutical Management and Marketing	2	PHRM 403
PHRM 405: Pharmacy and Neo-plastic Diseases*	3	PHRM 201, PHRM 401
PHRM 406: Pharmacy Practice*	3	PHRM 306, PHRM 316, PHRM 403
PHRM 407: Pharmaceutics II	3	PHRM 308
PHRM 408: Alternative Medicine*	3	PHRM 201
PHRM 409: Drug Design and Development	2	PHRM 301, PHRM 303
PHRM 410: Pharmaceutical Biotechnology	2	PHRM 305, PHRM 401
PHRM 411: Pharmaceutical Research	4	All Courses having Laboratory
PHRM 412: Pharmacy Quality Assurance and Improvement System*	3	
PHRM 413: Biopharmaceutics*	3	PHRM 308, PHRM 311
PHRM 414: Pharmaceutical Production System	3	PHRM 209, PHRM 211, PHRM 315
PHRM 415: Pharmacist Communication*	3	ENG 102, PHRM 211, PHRM 315
PHRM 416: Geriatric Pharmacy Practice*	3	PHRM 304, PHRM 305, PHRM 402
PHRM 417: Jurisprudence, Laws and Ethics	2	None
PHRM 418: Bioinformatics and Molecular Modeling	3	CSE107/ICE107, CSE301/ICE301

Any two from the ** marked subjects any 5 from the * marked subjects

Undergraduate Studies

Admission

Prospective students should obtain an EWU admission Form by paying in cash or by sending a bank draft for Taka 400 or US $10 to the Registrar's Office. The student should return the completed application form to the Registrar's Office within the stipulated time. All correspondence and inquiries concerning admission to the university should be addressed to the Registrar's office.

Students seeking admission in EWU must qualify in the admission test. The date of the test is announced in major daily newspapers. Students are tested on English Language (structure, vocabulary, comprehension and composition) and Basic Mathematics. Those who want to study Computer Science and Engineering and Information and Communications Engineering are required to have competence in HSC-level Mathematics and Pharmacy is required to have competence in HSC or A level Chemistry and Mathematics, while others are required to have reasonable proficiency in SSC-level Program Mathematics. Those who seek admission in BA (English) program are exempted from the Math Test.

Results of the Admission test are announced within 3 days of the test. A list of successful candidates is posted on the Bulletin Board of the university.

Admission Requirements

Minimum qualifications for admission to undergraduate programs are as follows:

1. Minimum 2nd division or an average GPA of 2.50 in SSC and HSC with a minimum of 2.00 in each
2. University of London GCE "O" level in four subjects with at least 8.0 points and "A" Level in two subjects with average GPA of 2.0. or
3. American High School Diploma and
4. Acceptable EWU Admission Test Score.

- Admission Test will be waived for candidates securing a minimum score of 1100 in the Scholastic Aptitude Test (SAT) and at least 550 in the Test of English as a Foreign Language (TOEFL).

Students who have completed a two-year Bachelor's degree from a recognized university can apply for admission into the four-year undergraduate program. However, EWU will consider applications for credit transfer only in cases where previous academic performance meets EWU degree requirements.

Application forms are available for Tk 400 at EWU Accounts Department, 43 Mohakhali, Dhaka 1212. Student can receive application forms by mail through writing to the office of the Registrar along with a bank draft or money order for Tk 400 in favor of East West University. However, it is preferable that the student/guardian collect application forms personally.

Learning Methodology

In order to produce graduates who can adapt their knowledge to changing circumstances, all the courses offered by different departments put great emphasis on applying concepts from classroom lectures and reading to solving problems.

The mode of education that East West University use has been called "analytical learning", which stresses understanding and problem-solving rather than memorizing. In this style, our responsibility is to provide experiences from which you can construct an understanding of the subject area. It is your responsibility to integrate the experiences into your mind, and to use the knowledge gained in different situations.

Lectures and Tutorials

The courses are organized to provide an opportunity for the student to learn the concepts and skills of the field. Lectures are perhaps the most visible form of teaching. A Course Outline for each course is provided by the faculty members at the first class of the semester illustrates the subject contents along with the assessment guideline and text/reference books for the course. It is important for the student to realize that lecture material is not intended for memorizing, but for understanding. Learning through interactive participation is a major emphasis at East West University.

Tutorials are widely used in the classes. These involve discussions between students and faculty members in the areas of interest and difficulty. Courses include assignments, which can help students learn the concepts and skills. Usually, an assignment will include some straightforward aspects, and also some parts that are designed to challenge the better students.

Courses also include in-course projects, which create impacts through infusion of the learned skills and concepts in real-life problem solving. In most cases, during project work students interact directly in the problem domain and thereby gain experiences.

Course Assessment

The different course instructors use a number of different ways to determine how well each student has mastered the materials presented. Semester final examinations along with two midterm examinations (held according to the semester academic calendar) are common besides class quiz and assignments. The course information given by the faculty member at the first class of the semester illustrates the assessment strategy for the respective course. All the in-course assessment results are posted on the notice board.

Student Ethics

East West University is committed to maintaining proper academic environment in its premises. Students are expected, as enlightened members of the society, to be of good moral character and decent conduct. They should observe the general rules of discipline, honesty, punctuality and respect for the rights of others within the premises. Willful violation of these general rules seriously disturbs the academic environment and undermines the efforts of the university to impart high quality education.

The university views academic misconduct such as plagiarism, candidate substitution or the use and possession of unauthorized material as a grave breach of discipline.

A. Academic Misconduct

i) Cheating at the examination by any method or means.
ii) Helping other students to cheat at the examinations.
iii) Reproducing the work of others as one's own work.
iv) Fabrication or the falsification of any information with the intent to deceive.
v) Forgery, alteration, or misuse of university documents, records and identity cards.

B. Social Misconduct

i) Abusive or disorderly conduct.
ii) Sexual harassment.
ii) Physical assault in any form.
iv) Direct and indirect threat of violence.
v) Verbal, mental, and physical harassment.
vi) Participation in any activity that may disrupt any function of the university

C. Property Damage

i) Willful damage or destruction of the university property.

D. Dangers to Health and Safety

i) Smoking inside university buildings.
ii) Possession or use of alcoholic drinks and drugs.
iii) Possession of sharp weapons and firearms.

E. Disobedience to lawful authority

i) Disobedience, interference, resistance or failure to comply with the direction of an authorized university personnel on duty.
ii) Unauthorized entry.

F. Theft

i) Theft or misappropriation of university funds and materials.
ii) Possession of stolen university property.

G. Penalties

The following are the representative types of penalties and sanctions that may be imposed on a student for violating the code of conduct of the university.

i) Warning in the form of written or verbal notice.
ii) Cancellation of the examination and/or an assignment.
iii) Expulsion for one or more semesters.
iv) Expulsion from the university.

H. Disciplinary Procedure

A Discipline Committee of the university examines the allegations of misconduct, takes evidence from both sides, and recommends penalties to be imposed on the student found guilty.

Academic Discipline

Any act of indiscipline, offence, or grievance committed by a student may be reported to the Proctor of EWU in writing by a student or staff/faculty for necessary action.

A Discipline Committee will act independently to ascertain facts and submit a report of the findings with recommendations for necessary action.

All students will receive photo identification cards with a student number. Students must display their ID cards when on campus. This is required for their own safety and the protection of the campus from unauthorized visitors. These cards will be used for various purposes such as entering campus, attending classes, using the library, and in accessing computers in computer labs.

Change of Degree Programs

A student who wishes to change his/her major discipline of study has to apply to the Dean of Faculties for permission to do so within the first year (three consecutive semesters) of his/her admission. Once the permission is granted, the student concerned must fulfil the following requirements within six semesters of his/her date of admission. The specific requirements of transfer to a particular major are set out below:

1. To change to Computer Science and Engineering:
   The applicant must secure a minimum grade of 'B' in

both MAT 101 and CSE 105 within the specified period of time.

2. To change to Computer Science:
   The applicant must secure a minimum grade of 'B' in both MAT 101 and CSE 105 within the specified period of time.
3. To change to Business Administration:
   The applicant must secure a minimum grade of 'B' in both BUS 101 and MAT 100 or MAT 110 within the specified period.
4. To change to English:
   The applicant must secure a minimum grade of 'B' in both ENG 101 and ENG 102 within the specified period.
5. To change to Economics:
   The applicant must secure a minimum grade of 'B' in either MAT 100 or MAT 110 and ECO 101 within the specified period.
6. To change to Information and Communications Engineering:
   The applicant must secure a minimum grade of 'B' in both MAT 101 and PHY 101 within the specified period.
7. To change to Pharmacy:
   The applicant must secure a minimum grade of 'B' in both MAT 101 and PHRM 101 within the specified period.

Alternatively, the applicant may appear in the subsequent admission test and qualify for the department to which s/he wants to study. For appearing in the subsequent admission test, the applicant must inform the Registrar office. A student will be allowed change of department once only.

Stuednt Clubs

In addition to academics, opportunities for other student activities abound. Students participate in different activities the all year round. The university has a number of clubs to promote various extra-curricular activities. These include:

The Business Club
The Computer Club
The Cultural Club
The Debating Club
The English Conversation Club
The Environmental Society
The EWU Cine Club
The Life (Pharmacy) Club
The Photography Club
The Sports Club

Career and Employment

A Career Counseling Center provides proper guidance to students about their career plans. The center liaisons with prospective employers and arranges internships and part-time jobs for students.

The Career Counseling Center also facilitates introduction of the students to the pioneer Business Organizations of the nation who can expand their activities by utilizing fresh mind imbued with modern skills and expertise. As a forerunner among private Universities in Bangladesh it is the spell bound commitment of this center not only to ensure excellence in education but also to assist our students find prospective career. The center organizes job fair on regular basis to both career-seeking individuals, participating companies and potential bodies who are employers to interact and to get to know each other's needs and priorities. Besides, the largest job portal in Bangladesh, BDJobs.com, has established a linkage with Career Counseling Center to extend job services to the graduates.

Academic Advisory System

To provide an environment of continuous academic advisory supports to student who requires it especially with respect to adapting into EWU academic programme, selecting a programme of study and determining the suitability of subject to be registered,

(1) Each student is assigned an Advisor at the beginning of the academic year who assists the student in defining educational goals to be reached; gives information regarding curricula, and graduate programs; and discusses personal problems the student may have, especially those related to the student's academic progress and plans for subsequent pursuits. Students are expected to schedule appointments with their advisors during pre-registration and at other times throughout the semester as needed.

(2) It is the responsibility of the Advisor to provide advisory support that ensure that the student will adapt well into his/her course of study, get the necessary advice with respect to programme of studies and other matters associated to it

Students must inform their advisors of any special needs or deficiencies, which might affect their academic performance, or selection of courses. Students are expected to know academic policies, procedures, and degree requirements, and must remain informed about their progress in meeting these requirements.

Students are encouraged to seek assistance as needed from the advisors and take advantage of student support services provided by the university.

Virtual Campus

In line with EWU's mission for "excellence in education" to provide world class education using IT and Multimedia Technologies, all the courses offered at different departments are on-line. The respective faculty member delivers this on-line content. An online course page allows the student access vital information about the course including: the course information, exam deadlines, lecture plan, lectures notes, model questions, link to relevant web sites etc.

Students are required to familiarize themselves with how to access subject web pages and use different features provided by the Virtual Campus link on the web site of the university at www.ewubd.edu. Besides, the students are also required to check for the make-up and extra classes on-line.

Attendance Requirement

For the students to complete their studies successfully, it will be necessary to attend reasonable portion (not less than 80%) of the lectures, tutorials and practical classes for the respective course and to carry out the necessary reading, preparation and assignments set.

Non-Degree Students

Applicants who are currently enrolled in an undergraduate program in a recognized university may apply for admission at EWU as non-degree students. Non-degree students may obtain transcripts reflecting credits and grades for the course(s) attended.

Tuition and other fees

The current fee structure is as follows:

1. Admission Fee (one-time)
Tk. 10,000

2. Course Fee
Tk. 2,000 per credit hour for English & Economics courses and Tk. 2,600 for all other courses

3. Laboratory Fee:
Tk. 1,000 per semester for CSC, CSE and ICE and Tk. 500 per semester for other departments.

4. Student Activity Fee
Tk. 300 per semester

A fee of Tk. 500.00 is charged for official transcript.

The university also offers remedial (non-credit) courses in English and Mathematics, for which a fee of Tk 2500 for each is charged for one semester only. Remedial Courses may be required for students on the basis of their score in English and Mathematics part of the Admission Test. Passing these remedial courses is a prerequisite for continuing as a student. Remedial Biology is offered in Pharmacy Department with the same fee structure. If a student fails in the remedial courses in the first attempt, he/she will have to pay regular course fees Tk. 7800 for these courses during subsequent registration.

Total estimated fees for graduation will be as follows:

Items	BBA	B.Sc.			B.PHARM.	Liberal Arts	Social Science
		CSC	CSE	ICE		English	Economics
Credits	123	130	143	140	148	123	123
Admission Fee	10,000	10,000	10,000	10,000	10,000	10,000	10,000
Course Fee	3,10,800	3,32,600	3,66,400	3,58,600	3,60,000	2,60,400	2,60,400
Lab Fee	6,000	12,000	12,000	12,000	6,000	6,000	6,000
Activity Fee	3,600	3,600	3,600	3,600	3,600	3,600	3,600
Total	**3,30,400**	**3,58,200**	**3,92,000**	**3,84,200**	**3,79,600**	**2,80,000**	**2,80,000**

Students must pay semester fees in full on the day of registration. A late registration fee of Tk. 500.00 is charged to students who register or pay their fees after the regular registration period. Approval to defer payment does not, however, reduce a student's obligation to pay tuition and fees. All dues are expected to be paid before the final examination.

Facilities & Amenities

VSAT and Computing Facility

East West University provides an unique opportunity for the computational demand of the ever increasing technology savvy society. The campus wide fiber optic network of 300 over workstations with servers of different brand helps students to acquire skills for the IT industry worldwide. The faculty members are keeping up with the demand of the technology and extend IT services to the nation.

The Network Infrastructure of the university is equipped with VSAT with AsiaSat 4, 2.4m Antenna C-Band, 2W ODU, BUC, LNB, FeedHorn, Reflector and LinkStar IDU (Built-in Router). The SunFire V100 with Solaris 8 OS for DNS, HP NetServer E-60 with Slackware OS for WWW, Proxy, & Mail Server, HP NetServer E-60 with WinNT OS for UMIS Server are the heart of the campus network and automation. One ALCATEL OmniStack 8008 GIGABIT Switch for Fiber Optic Backbone, four ALCATEL OmniStack 6124 Managed Switch for LAN, 48 Port Patch Panel, LIU with wall mount rack has shaped the fiber optic backbone of the EWU campus network.

Digital and Other Labs

The university, besides the computational facility, is equipped with modern digital laboratory and state of the art Physics Laboratory. Digital Laboratory is housed with equipment ranging from Digital Storage Oscilloscope, Digital Trainer Boards, Micro-Controllers, Interfacing Adapters, and other supporting peripherals. Students are engaged in transforming ideas and creating computer interfaces like Digital Meter for three wheelers etc.

The Physics laboratory is housed with modern instruments for everyday physics experiments. The dark room facility helps students to conduct optical experiments.

Modern Language Laboratory

The English Language Laboratory at East West University is used to expose students to different varieties of English, British, American, Australian, and some non-native varieties of English basically to help them develop their listening skills, their awareness about English pronunciation and also to generate discussion based on the listening texts. The Lab needs both audio and video support, we are in the process of having the later, to generate lively discussion on interesting listening passages and video-cliffs. Although Language Laboratory is not as popular today as it used to be in the 1950s, it provides useful clues for meaning language activities. Video-support makes Language Laboratory activities more motivating and more engaging for the students.

Center for Research in Business, Economics and Technology (CERBET)

A university without serious research endeavor can never attain a respectable position in the community of universities. Research conducted by teachers allows them to be at the forefront of the cutting edge knowledge in his/her field of specialization. Strong research activities translate into quality education in return. Therefore, to help creating a research environment for her faculty members and other researches, East West University established Center for Research in Business, Economics and Technology (CERBET) with the following goals to achieve:

- promote research activities for EWU faculty members and scholars in the field of business, economics and technology;
- provide consultancy services to various national and international organizations;
- offer executive development programs (EDPs) in management and technical areas to help train executives of both public and private enterprises;
- create database on various macro-economics variables; and
- help disseminate research outputs through publication and conducting seminars, workshops, etc.

The main strength of CERBET is its fellows. All EWU faculty members are automatically the fellows of CERBET. The full-time faculty members with diverse background and interest have already enriched the center. In addition, the center has fellows from other institutions.

CERBET funds research projects undertaken by EWU faculty members and conducts training programs. The main purpose is capacity building. Young faculty members from both public and private universities participate in the programs. EWU is providing the lion share of the fund needed to carry out different research activities.

CERBET is constantly planning to undertake many other activities independently and in some cases in collaboration with other research and development institutions. It is exploring the possibilities of working with international development agencies such as, World Bank, IFC, ADB, etc. and also with local trade bodies, such as, Dhaka Chamber of Commerce and Industries (DCCI), Metropolitan Chamber of Commerce and Industries (MCCI), etc

Software Development Center (SDC)

The mission of the Software Development Center (SDC) at East West University is to provide EWU students with real-world experience in designing and developing quality software for offices, banks, institutions and industry.

Software Development Center, being a member of BASIS (Bangladesh Association for Software and Information Services), at EWU incorporates industry expertise for true software innovation and has the potential to bring the dream in the presence of the World Wide Web. The SDC believes in simplicity and efficiency.

The coming century brings a new paradigm of information technology where objects are embedded as the living and the exciting part of the worldwide web. Software Development Center intends to integrate object oriented programming (OOP) concept with the world wide web by providing unique software development services along with the training and mentoring programs of global IT standard.

Software Development Center believes in quality as the first principle both in software development and in training and mentoring with the involvement of prominent academicians and industry experts from home and abroad.

On-line Library

Library at East West University holds a unique place among the Private University libraries of the country. It provides an array of extraordinary facilities to the library users with the help of state-of-the-art techniques and technologies. At present the Library has more than 10,000 volumes of books. It subscribes to more than thirty different journals, magazines and newsletters.

The Library has been completely automated by the SDC of East West University. The automation includes issue/circulation based on barcodes and automatic fine calculations with other useful features. The most exciting part of the automation is the web component. The students and the faculty members use the web module. The faculty members post requisition for the book using the web modules at any time during the semester.

The fully air-conditioned EWU Library remains open every day of the week. Library users can use library facilities from 9:00am to 10:00pm from Saturday to Wednesday; from 9:00am to 02:00p, on Thursday and from 3:00pm to 10:00pm of Friday.

Besides a rich collection of more than 10000 books and other reading materials, the library regularly subscribes to 12 national and international dailies and more than 30 acclaimed national and international journals and periodicals. It also has an affluent collection of CD-ROM and Audiocassettes on different academic subjects. Two specious floors house separate Circulation and Reserve and Reference Sections, which can accommodate more than 300 students. There is also a separate air-conditioned Study Room where more than 100 students can hold group discussions.

The library has Open Access System, i.e. the students and teachers can have direct access to the book shelves. Faculty members can borrow books for the whole semester. Members of the Academic Council also enjoy the same book borrowing facilities as the faculty members. Students can borrow CD-ROMs for 1 day, Textbooks for 3 days and Reference books for 5 days. Apart from Current Awareness Service (CAS) and Selective Dissemination of Information (SDI), the library also provides bibliographic, abstracting, database and ready reference services.

The library is the backbone of the research and development activities of the EWU and recently has subscribed On-line digital library JSTOR that provides a very rich collection of 42 different journals worldwide. Along with the JSTOR, the faculty members are utilizing marketingpower.com, marketingprof.com and other .com, .net resources in the delivery of excellence in teaching and learning environment of the university.

Faculty members and students can avail themselves of photocopy service. The library provides news clipping services on important subjects on a regular basis. It maintains a separate database for newspaper clippings. The library is equipped with all modern facilities including computers, printers, electronic typewriters, etc.

Other Facilities

Spacious air-conditioned class rooms.
Free e-mail and Internet access
Medical Center
Card phone
Prayer room
Cafeteria
Study room and
Separate male and female common room with indoor game facilities and TV.

Credit Transfer Policies

Credit Transfer Requirements

Students who intend to be admitted into EWU with credit transfer are considered for admission based on the result of the admission test and courses completed at public universities of Bangladesh, and other reputed private universities of Bangladesh. Credit is generally transferable, provided that course work has been successfully completed and is equivalent to that offered at East West University.

Faculty members evaluate courses already completed according to an established procedure. Courses taken at other university/institutions may satisfy the core curriculum requirements only if the courses are equivalent to EWU courses approved for the core curriculum and a minimum C grade was earned. Course equivalencies are determined on the basis of contents, prerequisites, writing requirements, and level. Some transfer students may be required to sit for placement examinations to determine eligibility for credit transfer.

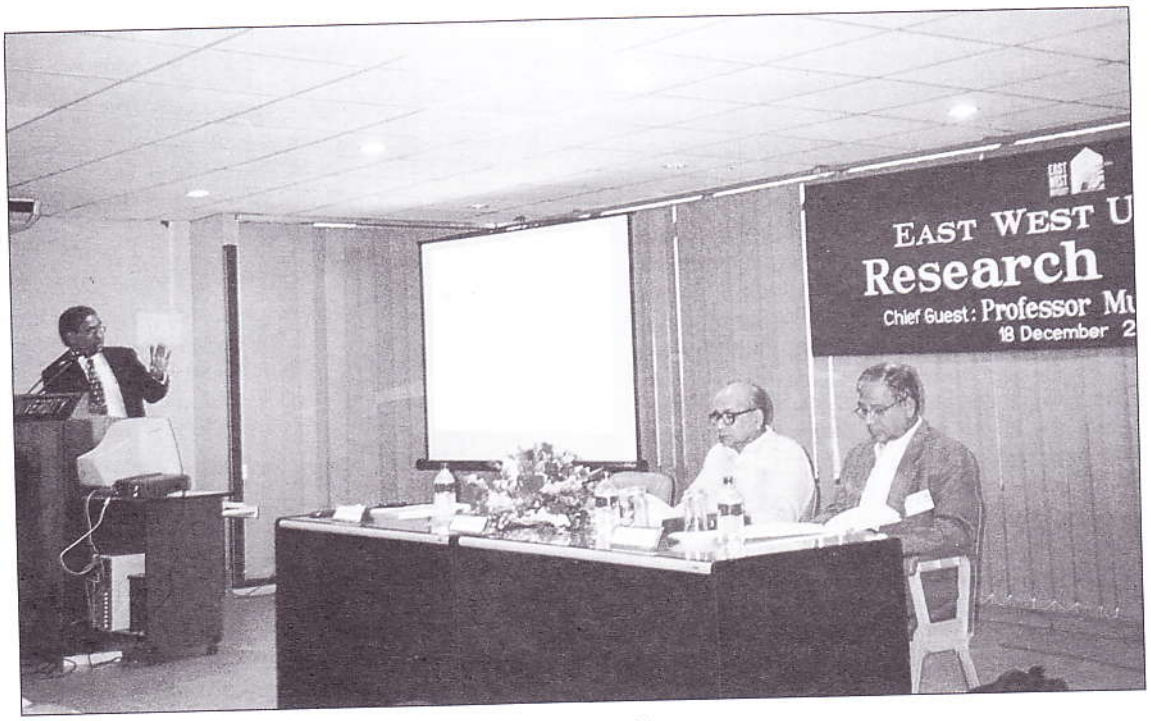
Residency Requirements

A maximum of fifty percent (50%) of credit hours for the intended undergraduate program may be accepted through credit transfer into EWU's academic program.

The basic courses offered by the EWU as per the requirement of the degree, which the applicant has not completed, are not transferable.

Important Guidelines

1. The award of credit transfer will be administered on a case to case basis
2. Applicant must ensure that the following documents are submitted to apply for the credit transfer on the stipulated transfer deadline:
   i. An official transcript of the university/institution record to date
   ii. Complete syllabus of the subjects that are applied to be credited
   iii. An application for credit transfer



Research Adda

Course Registration

Gourse Registration On-line

The Admission Office will notify newly accepted students about the time and place of their registration. Students are responsible for fulfilling all requirements of the degree program in which they have been admitted. They should consult their advisors in planning their course schedules and be familiar with EWU policies and procedures related to registration and graduation requirements for their degrees. Registration is incomplete until all fees are paid.

A student can not register after the scheduled date of registration mentioned in the academic calendar except by special permission of the Dean of Faculties. To avoid late fees (Tk. 500.00) students must register during the scheduled registration period.

Registration for any session of the university is contingent upon eligibility for registration. Thus advance registration, including the payment of tuition and fees are considered invalid if the student is later declared to be ineligible to register due to scholastic reasons. Detailed information about dates and procedures for advise and registration are shown in each semester's academic calendar of the university which is available in the Registrar's Office of EWU.

Add/Drop/Withdraw

Students who seek to add or drop courses should consult their advisors first. They must also obtain signatures of instructors of relevant courses.

Students may add courses only within the date mentioned in the Academic Calendar, if space is available, with the approval of their academic advisors.

The last day for dropping a course with and without a record entry (i.e. "W") is mentioned in the semester academic calendar. The grade "Withdrawal" (W) is assigned when a student officially drops a course within the date mentioned in the academic calendar for the semester.

The instructor may drop students from a course if they fail to attend 80 percent of the scheduled classes. The student must keep the instructors informed regarding absences in classes.

Registration Guidelines

Students should also be familiar with the following general points about Registration.

1. Registration for a semester is conducted under an academic calendar. Registration starts a week before the start of classes and late registration continues till the second week of classes. Student must know his/her advisor for the completion of the registration.
2. Mere attendance does not mean registration in a class, nor will attendance in a class for which a student is not registered be a basis for asking that a program change be approved permitting registration in that class. Students should complete the registration process before classes begin.
3. After the second week of the semester, the Office of Admissions and Records will process the Official Registration form.
4. Tuition and fees are payable in advance or by installments with prior approval. A student shall not be enrolled or enrollment shall be officially deferred until at least the first installment of tuition and fees have been paid.
5. Students can not drop a course merely by stopping attendance.
6. Students must register for a minimum of 3 (three) courses every semester.
7. The maximum of number of courses a student can take in a semester is 5 (five).
8. Students, who after advising fail to pay their tuition and other fees, will have to pay a fine of 50 percent of the total fees charged for the semester.

Late Registration

A student who seeks to register after the first day of the semester must have the permission of the Dean of Faculties. Those students who are given permission to register late must pay a late registration fee of Tk.500.00

Refund Policy

Applications for withdrawal from the university or from a course after the registration period is over must be made in writing to the Registrar. Merely notifying an instructor will not be sufficient. In cases of authorized withdrawals, and changes in schedule/registration (adds and drops), adjustment of semester tuition and fees will be made as per provisions mentioned in the academic calendar.

No adjustment is authorized for the Admission fee or other assessed fees. Financial assistance will be awarded on the same basis as the adjustment policy.

Withdrawal as a result of serious illness or disabling accident will be subject to review by the university for possible variations from the policy described above. Such events are considered on a case to case basis. No adjustment will be made for a student who is suspended, dismissed, or expelled for breach of discipline.

Examination Rules & Regulations

Grading System

A student may earn five letter grades on the basis of his/her performance in a course. The letter grades A, B, C, and D are considered passing grades. The grade F is the failing grade. The numerical equivalents of the grades are as follows:

GPA and Class Equivalence

Grade Point Average earned by a student is the numerical value obtained by dividing the total grade points earned in a semester by the credits attempted for the semester. Only the courses graded A+, A, A-, B+, B, B-, C+, C, C-D+, D, and F are used to determine credits attempted.

Numerical Scores	Letter Grade	Grade Point
97-100	A+	4.00
90 – below 97	A	4.00
87 – below 90	A-	3.70
83 – below 87	B+	3.30
80 – below 83	B	3.00
77 – below 80	B-	2.70
73 – below 77	C+	2.30
70 – below 73	C	2.00
67 – below 70	C-	1.70
63 – below 67	D+	1.30
60 – below 63	D	1.00
below 60	F	0.00
	F* Failure	0.0
	I** Incomplete	0.0
	W** Withdrawal	0.0
	R** Repeat	0.0

* Credits for courses with this grade do not apply towards graduation.

** Credits for courses with these grades do not apply towards graduation and are not used for the calculation of the grade point average.

The exact cut off points for assigning letter grades are at the discretion of individual instructors. The same applies to the assignment of '+' or '–' after a letter grade. This is meant to give more flexibility so that shades of performance can be '+' and '–' distinguished and rewarded with the value of 0.3 grade point by the grades.

Grade Report

Grade reports are recorded and prepared by the Registrar's Office and mailed to guardians soon after the end of each semester. Students are solely responsible for their academic progress and should consult immediately with their academic advisors if their performance is unsatisfactory. Failure to maintain satisfactory progress can lead to the cancellation of financial aid, academic probation, dismissal, or other equally serious consequences.

In case students repeat courses, GPA and CGPA will be calculated on the basis of the grades obtained at the last attempt of the course(s) only. Grades obtained in course(s) in all examinations will be shown in the grade report.

Moreover, students who complete courses in addition to their normal credit requirements for graduation will inform the Registrar in writing about the courses, which s/he intends to declare for consideration towards the requirements for the degree.

EWU students are evaluated on CGPA. Comparison of the CGPA earned by EWU students to the classes earned by students in other universities in the country is as follows:

CGPA 3.00 and above	=	First Class
CGPA 2.50 to 2.99	=	Second Class
CGPA 2.00 to 2.49	=	Third Class

Probation and Dismissal

Student whose CGPA will be between 1 and 2 after the first two semesters will be placed on probation for the next two semesters. Fail to raise their CGPA to at least 2 after the probation period will lead to dismissal from the university. If a student's CGPA falls below 2 subsequently, he/she will again be placed on probation.

Academic Dismissal: A student whose CGPA falls below 1 after the first two semesters will be automatically dismissed from the university. Students who fail to raise CGPA to satisfactory levels during the probation period will face dismissal from the university.

Remedial Courses may be required for students on the basis of their score in English and Mathematics part of the Admission test. Students who fail to pass in remedial courses in two attempts will be placed on probation.

Once dismissed for scholastic failure, a student is ineligible to enroll in further courses, and re-admission to the university will not also be allowed.

Incomplete (I)

The "Incomplete" (I) grade may be used in special circumstances. The "Incomplete" may be given only at the end of a semester to a student who has completed all other requirements except appearing at the final examination without further class attendance. The instructor must file with the Registrar an Incomplete Grade Form describing the work to be completed.

The student has the sole responsibility to take the initiative in making up the requirements for the Incomplete as specified by the instructor. If action is not taken within one week of commencement of the next semester, the "I" grade will automatically be converted to "F", otherwise the "I" grade will revert to the tentative final grade (the final grade becomes an "F" if no tentative grade was assigned). In the event where the instructor from whom a student received an incomplete grade is not available, the disposition of the case involving an incomplete grade resides with the Dean of Faculties.

Withdrawal (W)

The grade "Withdrawal" (W) is assigned when a student officially drops a course within the date mentioned in the academic calendar for the semester.

Retake Policy

Students with a grade of "C" and below will be allowed to retake the course only once. In these cases, the better grade of the two attempts will be used to calculate the GPA and CGPA and the other grade will appear as "R" on the grade report.

Students who wish to retake a course must obtain previous written permission of the Chairperson of the Department concerned. They will have to register for the course again and will be required to pay usual tuition including lab (if applicable) and other fees.

Academic Honesty

There is a policy of zero tolerance on cheating. Any form of cheating such as copying any document or another person's work, seeking or providing help to other students during tests, or adopting any other form of unfairmeans during exams, will constitute grounds for disciplinary action. Instructors are expected to use reasonably practical means of preventing and detecting cheating. Any student found to be cheating would be reported to the Dean of Faculties by the relevant faculty member for disciplinary action.

Leave of Absence

A leave of absence may be granted for upto three semesters to a student in good academic standing (not to those on academic probation or subject to dismissal). A student applying for a leave of absence must give a definite semester for re-registration and must register within three semesters of the date of leaving school. Only one leave of absence can be granted. A leave of absence is granted through the Dean of Faculties office. A student who does not return for re-registration at the specified semester will be classified as "Officially Withdrawn" and must apply for re-admission to the Registrar.

Absence from Examinations

In the case where a student has been absent from the examination of any subject due to medical or humanitarian reasons, the student must notify to the respective faculty member within 48 hours of the conduct of the examinations on his/her standings. The faculty member may decide as "Incomplete (I)" based on the support documents provided by the student along with the application for incomplete and take a supplementary examination within the stipulated time frame given by the university. In case, the reasoning for the absence in examination is found unacceptable, the respective faculty member would follow the university guideline to assess the student.

Scholarship and Financial AID

East West University offers merit scholarships and need-based financial assistance to deserving students. Every semester the university distributes at least 5% of its total earnings among 10% or more of its students. In order to be able to further support and nurture the middle class merit, particularly from outside the metropolis, the Board of Directors of East West University have set up a fund called "The East West University Medha Lalon Fund" with an initial endowment of Taka one and a half crore.

Merit Scholarships

According to the provision of the Private University Act, 1992, private universities must provide scholarships to 5 (five) percent of its tuition revenue to poor but meritorious students. Since its inception, East West University adopted a policy not to pay any profit or dividend to its sponsor directors but to use a good part of its operating surplus towards nurturing middle class merit. In the last four years, the scholarship and financial aid policy in East West University has evolved as of great encouragement to the meritorious and to the financial income deficient. Benefits have been awarded in the following forms:

Merit Scholarships are awarded as per the following criteria:

1. A+ grade in most recent HSC examination and 4 A's in "O" level and two A's without any score below B in "A" level examination get a full-year tuition waiver scholarship. The scholarship is extendable under '2' below.
2. Top 10% (based on merit) students of each batch of each Department completing at least 30 credits during the immediate past year get merit scholarships for 30 credits for the next three consecutive semesters.
3. Two best results in undergraduate and one best result in graduate Admission Test.

Directors Scholarships

Each of the fifteen Founder Directors of the university shall, at a point of time, award one full tuition waiver scholarship to a student or split this into two for two half tuition waiver scholarships. This is renewable on expiry unless the recipient scholar performs poorly.

Financial Aid

(a) *Family Concession*

For a second child of the same parents studying simultaneously at East West University, the second one is entitled a half tuition waiver. The benefit commences on the date of admission of the second child and ceases on the discontinuation of the study of anyone after his/her graduation or for any other reason. This benefit may extend upto the third child of the same parents under the above mentioned conditions.

(b) At the beginning of each semester the university considers, on application in prescribed forms, granting of financial aid to deserving students primarily on need-base consideration but requiring a minimum CGPA. The applicants achieving the minimum prescribed CGPA of 2.50 in the last academic year (30 credits in three consecutive semesters) with demonstrated financial need shall be awarded part of the tuition for the next thirty credits, the actual amount often depends on the number of applicants and availability of funds [5% of tuition revenue net of funds locked for 1(a) and 1(b) but excluding 2]

The following table shows the number of recipients of various scholarship and financial aids in the last four years:

Sl	Particulars	2000		2001		2002		2003	
		No. of Students	Taka	No. of Students	Taka	No. of Students	Taka	No. of Students.	Taka
1	Merit Scholarship	29	1,262,300	42	1,882,400	50	2,660,650	82	4,439,550
2	Medha Lalon	--	--	--	--	--	--	30	720,600
3	Financial Aid	43	756,600	66	1,551,850	70	1,673,800	127	2,033,900
4	Half Tuition Waived	33	835,900	47	1,253,200	60	1,543,800	90	2,382,975
5	Directors Quota	-	-	4	163,800	16	923,600	22	1,099,400
6	Special Discount	-	-	-	-	15	205,100	15	285,800
Total		105	2,854,800	159	4,851,250	211	7,006,950	366	10,962,225
Percentage (%) of Tuition Income		5.02%		5.57%		5.92%		6.75%	

As is evident, the university policy is quite generous in nurturing merit with amounts beyond the 5 percent of tuition income prescribed by the authorities.

It is also worth noting that the university encourages, as a conscious policy, enrolment of mofussil students who are also, therefore, beneficiaries of the scholarship and financial aid awards.

The Medha Lalon Fund

In order to be able to further the support towards nurturing the middle class merit, particularly from outside the metropolis, the Board of Directors of East West University set up in 2002 a facility called the East West University Medha Lalon Fund with an initial endowment of taka one and a half crore. The Board has already sanctioned an amount of taka one crore twenty lakhs from the operating surplus of the university. Five generous persons/organizations have contributed a combined amount of taka twenty-seven and a half lakhs. Some more contributions have been finally committed.

From the annual earnings of the East West University Medha Lalon Fund already deposited in a five year 12 percent per annum Scholarship Deposit Account of Mercantile Bank, need-cum-merit based financial aid would be awarded in the following names:

1	Sujat Ali Mazumder Scholarship	Tk. 35,000 a year
2	Anjuman Ara Begum Scholarship	Tk. 35,000 a year
3	S.M. Sahiruddin Scholarship	Tk. 35,000 a year
4	Rowshan Ara Begum Scholarship	Tk. 35,000 a year
5	Sanuwar Bakht Chaudhury Scholarship	Tk. 35,000 a year
6	Sofia Khatun Scholarship	Tk. 35,000 a year
7	Lutful Bari Md. Munsur Chaudhury Scholarship	Tk. 35,000 a year
8	Shamsunnessa Begum Scholarship	Tk. 35,000 a year
9	Shenfa Chowdhury Scholarship	Tk. 35,000 a year
10	Shenfunnesa Begum Scholarship	Tk. 35,000 a year
11	M. Mahtabuddin Scholarship	Tk. 35,000 a year
12	Chamak Chand Scholarship	Tk. 35,000 a year
13	M. Sujat Ali Scholarship	Tk. 35,000 a year
14	Shakuna Khatun Scholarship	Tk. 35,000 a year
15	Mujibur Rahman Lasker Scholarship	Tk. 35,000 a year
16	Khodeza Abu Taher Scholarship	Tk. 35,000 a year
17	Moulvi Muhammad Shamsher Ali Scholarship	Tk. 35,000 a year
18	Momena Khatun Scholarship	Tk. 35,000 a year
19	Hajee Shabuddin Scholarship	Tk. 35,000 a year
20	A.B.M. Ghulam Mohiuddin Scholarship	Tk. 35,000 a year
21	Abu Ahmed Abdul Hafiz Scholarship	Tk. 35,000 a year
22	Syeda Shaher Banu Chaudhurani Scholarship	Tk. 35,000 a year
23	Abdul Kaher Scholarship	Tk. 35,000 a year
24	Habiba Khatun Scholarship	Tk. 35,000 a year
25	Alhajj Abdur Rahman-Begum Walida Rahman Scholarship	Tk. 35,000 a year
26	Justice Nurul Huda-Begum Sufia Huda Scholarship	Tk. 35,000 a year
27	M.A. Haque Scholarship	Tk. 35,000 a year
28	Abdur Rahman Scholarship	Tk. 35,000 a year
29	Abdul Jabbar Scholarship	Tk. 35,000 a year
30	Abdus Samad Scholarship	Tk. 35,000 a year
31.	Dutch Bangla Bank Scholarship	Tk.25,000 a year
32.	Dutch Bangla Bank Scholarship	Tk.25,000 a year
33.	Dutch Bangla Bank Scholarship	Tk.25,000 a year
34.	Suraiya Farashuddin Scholarship	Tk.25,000 a year
35.	Suraiya Farashuddin Scholarship	Tk.25,000 a year
36.	Standard Chartered Bank Scholarship	Tk.25,000 a year
37.	Standard Chartered Bank Scholarship	Tk.25,000 a year
38.	Eakub H. Chowdhury Scholarship	Tk.25,000 a year
39.	Eakub H. Chowdhury Scholarship	Tk.25,000 a year
40.	Mercantile Bank Scholarship	Tk.25,000 a year
41.	Mercantile Bank Scholarship	Tk.25,000 a year

These scholarships are in addition to the usual scholarship/financial aid provided by the university and as described under 1, 2 and 3 above.

The East West University Medha Lalon Fund is administered by the Financial Aid Committee of the university. The applications for financial aid at the beginning of each semester is processed along with and as per the manner as in 3(b). The recipients is then ranked in descending order of need. Higher of the amounts between the Medha Lalon Fund Scholarships or the regular financial aid of the university is awarded to the applicants with maximum need. No student of university is entitled to benefit from more than one scholarship/financial aid facility at any point of time.

The university charges a one percent administration costs on the entire earnings of the East West University Medha Lalon Fund. It ensures maintenance of regular accounts of the Medha Lalon Fund and have the same externally audited every year.

The Financial Aid Committee keeps the donors to the Medha Lalon Fund informed about the operation of the fund on a regular basis. The Committee shall arrange annual meetings of the donors to the East West University Medha Lalon Fund to apprise them of the operating procedure, Scholarship awards and performance of the Scholarship awardees as well as seeking guidance of the donors.

Recipients of Merit Scholarships 2002 with the UGC Chairman, Professor Dr. M. Asaduzzaman

Recipients of Merit Scholarships 2003 with the State Minister of Education, A. N. M. Ehsanul Hoque

List of Courses

ACT 101: Financial Accounting
Introduction, accounting concept and classified financial statement, Measuring and recording business transaction, Business income and adjusting entries, Completing the accounting cycle, Accouting for merchandising operations, Accounting information systems, Internal control and cash. Accounting for receivables, Inventories, Plant assets, Natural Resources and Intangible assets and accounting principles.
Credits: 3; Prerequisite: BUS 101

ACT 201: Management Accounting
Introduction to management accounting, fundamentals of cost volume analysis and product costing, management reporting and information and decision making, introduction to budgets and standards for planning, control and performance measurement.
Credits: 3; Prerequisite: ACT 101

ACT 311: Taxation
Examines tax entities, concept of income, deduction of credits, recognition and non-recognition of gains and losses from disposition of property, distributions form and liquidation of the business entity, administration provisions of the tax law, and tax planning.
Credits: 3; Prerequisite: ACT 201

ACT 411: Intermediate Accounting-I
Accounting concepts, principles and theory with an emphasis on the special problems that arise in applying these concepts for external reporting purposes, emphasis on the use of accounting information as a basis for decisions for management, stockholders, creditors, and other users of financial statements and accounting reports.
Credits: 3; Prerequisite: ACT 201

ACT 421: Intermediate Accounting-II
Examines accounting concepts, principles and theory with an emphasis on the special problems that arise in applying concepts of financial accounting for external reporting purposes.
Credits: 3; Prerequisite: ACT 411

ACT 427: Auditing
Surveys the auditing converting issues common to external and internal auditing. Topics included: auditing theory, evidential matter, principles of internal control, sampling, testing and the application of computerized techniques.
Credits: 3; Prerequisite: ACT 421

ACT 430: Accounting Information System
Examines the fundamental of accounting systems design, including system analysis and design techniques, Surveys hardware and software considerations, analyzes accounting applications with fundamental areas of the firm and studies the control of computerized systems in a business environment.
Credits: 3; Prerequisite: ACT 201

ACT 441: Cost Accounting
Use of approaches of cost accounting to enable students to apply costing methods and techniques to assist with special emphasis on standard costs, process costing, joint-product and by-product costing, relevant cost, direct cost, cost-volume-profit relationship and responsibility accounting.
Credits: 3; Prerequisite: ACT 201

ACT 456: Accounting Theory
This course is a study of theoretical framework, elements of financial statements along with their reporting and disclosure with emphasis on recent trends and developments in the agenda and pronouncement of the standard setting bodies (e.g. FASB and IASC). Topics include structure of accounting, their approaches to the formulation of accounting theory, conceptual framework for financial accounting; development of accounting, revenues, expenses, gains, losses, income, assets, liabilities, statement of changes in financial position and their disclosure. Students conduct independent research on financial accounting and reporting issues.
Credits: 3; Prerequisite: ACT 421

ACT 478: Advanced Accounting
A study of detailed knowledge of accounting principles, concepts, techniques to explore more complex accounting problems along with preparing financial reports of organizations for the users explaining the international dimensions of financial accounting and compare different practices. Topics include financial reporting fundamentals, financial reporting and accounting concepts, segment reporting, interim financial reporting, consolidated financial statements with special problems and foreign currency translation.
Credits: 3; Prerequisite: ACT 421

BUS 101: Introduction to Business

This course covers the following topics: business and its importance and need, forms of business ownership, business environment, ethics, international business, fundamentals of management, human resources management, motivation, marketing, financial management and investment, and fundamentals of accounting.

Credits: 3; Prerequisite: None

BUS 231: Business Communication:

Study of communication as a tool of administration and management, practice in writing a wide variety of types and forms of communication, and inclusion of oral and visual with the written to provide and integrate approach.

Credits: 3; Prerequisite: ENG 102

BUS 361: Legal Environment of Business:

An overview of the legal, social and ethical dimensions which influence business with particular attention to the role of law as a control factor of society in the business world .

Credits: 3; Prerequisite: None

BUS 498: Project Work

The coordinating instructor must assign the individual student for a specific topic. The student must submit a proposal at least a semester before he/she actually starts working on this project report.

Credits: 3; Prerequisite: All required courses. Students completing 105 credits may be allowed to enroll in this course with the permission of the chairperson and course instructor.

BUS 499: Internship

This working experience enables students to apply the principles and practices of business in the local setting. This will provide the students with the opportunity to get real life exposure in the contemporary business environment of Bangladesh.

Credits: 3; Prerequisite: All required courses. Students completing 105 credits with a minimum CGPA of 2.5 may be allowed to enroll into this course with the permission of the chairperson and course instructor.

CSE 101: Introduction to Computers I

An introduction to the skills, concepts, and capabilities necessary to effectively use information technology, i.e., computers and communication. The skills include standard applications to email, word processing, and Web search. The concepts include digital representation of information, computer basics and introductory programming. Capabilities include managing complexity, debugging, and dealing unexpected consequences. The course includes lab works based on theory taught.

Credits: 3; Prerequisite: None

CSE 102: Introduction to Computers II

Fundamental of Information Systems, Operating Systems, Programming Languages, Database Systems, Computer Networks, Computer Graphics, HTML/DHTML, Web Design, E-Commerce, Multimedia and other recent development in computing fields. The course includes lab works based on theory taught.

Credits: 3; Prerequisite: CSE 101

CSE 105: Structured Programming

Introduction to digital Computers. Programming algorithms and flowchart construction. Information representation in digital computers, binary number system, binary arithmetic, binary codes. Writing, debugging and running structured programs using C language: data types, variables, constants, operators and expressions, assignments and type conversion in assignments, control flow, functions and program structure, pointers and arrays, strings, advanced data types, pointer to functions, user defined data types, advanced operators, records, input/output, dynamic variables and linked lists, recursion, and graphics programming. The course includes lab works based on theory taught.

Credits: 3+1=4; Prerequisite: None

CSE 107: Object Oriented Programming

Concepts of object oriented programming: objects, polymorphism, inheritance. Object oriented programming with C++ language: classes, parameterized constructors, friend functions, multiple inheritance, passing object to functions, arrays of objects, pointer to objects, function and operator overloading, overloading constructor functions, references, inheritance, virtual functions and polymorphism, I/O class library, streams, creating insertors and extractors, formatting I/O, file I/O, dynamic allocation using new and delete, static class members, complex and BCD classes, the message based philosophy. Using C++'s memory model, using VROOMM overlay technology, using command line compiler, compiling multiple file programs. Standard Template Library. Exception handling. Introduction to Java language. The course includes lab works based on theory taught.

Credits: 3+1=4; Prerequisite : CSE 105

CSE 109: Electrical Circuits

Fundamental electric concepts and measuring units. D. C. voltage, current, resistance and power. Laws of electrical circuits and methods of network analysis. Principles of D. C, measuring apparatus. Laws of magnetic fields and methods of solving simple magnetic circuits. Alternating current – instantaneous and r.m.s current, voltage and power, average power for various combinations of R, L and C circuits, Phasor representation of sinusoidal quantities. Single-phase AC circuit analysis. Introduction to Polyphase circuit analysis. The course includes lab works based on theory taught.

Credits: 3+1=4; Prerequisite: None

CSE 205: Discrete Mathematics

Mathematical logic: propositional calculus, predicate calculus. Permutations, Combinations and Discrete Probability. Set theory: sets, relations, partial ordered sets, functions. Graph theory: graphs, paths, trees. Recurrence Relations and Recursive Algorithms. Algebraic structures: binary operations, semi groups, groups, permutation groups, rings and fields, lattices.
Credits: 3; Prerequisite: MAT 100

CSE 207: Data Structure

Data types, abstract data types and data structures. Efficiency of algorithms. Sequential and linked implementation of lists. Linked list and applications. Stacks and Queue and applications. Tree representations and traversals, threaded trees, heaps, binary search tree, AVL tree, B+ tree, digital search tree, Tries. Searching, priority queues, hashing. Graphs, DFS and BFS, shortest path and minimum spanning tree. Garbage collection. Dynamic storage allocation. Internal and external sorting. The course includes lab works based on theory taught.
Credits :3+1=4; Prerequisite :CSE 105, CSE 107

CSE 225: Numerical Methods

Solution techniques for linear, simultaneous algebraic equations: iterative methods of solution of nonlinear equations, interpolation of curve fitting, numeric integration by interpolative and quadrature methods; numerical solution of ordinary differential equations including initial value eigenvalue problem and boundary value problem, matrices. The course includes lab works based on theory taught.
Credits: 3; Prerequisite: CSE 105, CSE 107

CSE 245: Algorithms

Techniques for analysis of algorithms. Methods for design of efficient algorithms: divide and conquer, greedy method, dynamic programming, backtracking, branch and bound. Searching and sorting algorithms. Graph algorithms. String manipulation algorithms. Arithmetic algorithms. Number theoretic algorithms. Lower bound theory, NP-hard and NP-complete problems. The course includes lab works based on theory taught.
Credits: 3+1=4; Prerequisite: CSE 105, CSE 107, CSE 207

CSE 251: Electronic Devices and Circuits

Semiconductors, Junction diode characteristics, Bipolar transistor characteristics, Small-signal low frequency h-parameter model, hybrid pie model. Amplifiers, Darlington pairs. Introduction to oscillators, differential amplifiers. Linear application of op-amp, gain, input and output impedance, offset null adjustment, frequency response and noise. Introduction to JFET, MOSFET, NMOS, and CMOS – biasing and application in switching circuits. SCR, Triac, Diac, UJT: characteristics and applications. Introduction to rectifiers, active filters, regulated power supply, stabilizer and UPS. Basic ideas about IC fabrication technique. The course includes lab works based on theory taught.
Credits : 3+1=4; Prerequisite: CSE 109

CSE 252: Basic Electronics

Introduction to DC and AC voltage, current and Power, Classification of electrical components: resistors, capacitors and inductors. Ohm law, kirchhoffs Law: KCL, KVL and their limitations. Basic circuit analysis methods: nodal, mesh and modified nodal-analysis. Fundamentals of AC circuits, Transformer, Induction to 3-phase circuit. Semiconductor Materials and PN Junctions, Semiconductor Diodes: Barrier formation in metal-semiconductor junctions, PN homo- and hetero-junction; VI characteristics; Small signal models of diodes; Some Applications of diodes; Special diodes. Bipolar transistor: IV characteristics and small signal models; Transistor biasing; Small signal amplifiers.
Credits: 3+1=4, Prerequisite: None

CSE 255: Digital Logic Design

Review of Binary number system, Boolean algebra, Simplification of Boolean Functions, Logic gates, Combinational Logic, Arithmetic and Comparator Circuits, Encoders and Decoders, Multiplexers and Demultiplexers, Flip-Flops, Sequential Logic, Registers, Counters, Programmable Logic devices. The course includes lab works based on theory taught.
Credits: 3+1=4; Prerequisite: None

CSE 275: Operating Systems

Principles of operating systems. Process management, memory management, auxiliary storage management and resource allocation. Operating system design and construction techniques. Concurrent programming, operating system kernels, correctness, deadlock, protection, transaction processing, design methodologies, comparative structure of different kinds of operating systems and other topics.
Credits : 3; Prerequisite : CSE 105, CSE 107, CSE 207

CSE 301: Database Systems

Fundamental concepts. System organization and implementation of database systems. Relational, hierarchical and network data models. File organizations and data structures. Query languages, query optimization. Database design. Concurrency control. Security issues evolving distributed database systems. The course includes lab works based on theory taught.
Credits : 3+1=4; Prerequisite : CSE 105, CSE 107

CSE 350: Data Communications

Principles involved in data communication. Modulation techniques, Pulse Modulation, Pulse amplitude modulation, pulse width modulation, pulse position modulation, pulse code modulation, pulse position modulation, quantization, Delta modulation, TDM, FDM, OOK, FSK, PSK, QPSK. Representation of noises, probability of error for pulse system, concept of channel coding and capacity, asynchronous and synchronous communications. Multiplexers, concentrators and buffers, communication medium, fiber optics.

Credits : 3; Prerequisite : MAT 101, MAT 102, CSE 109, CSE 251

CSE 360: Computer Architecture

Study of architectural concepts in computer systems. Computer arithmetic and arithmetic logic unit design. Memories, memory hierarchies and dynamic address translation. CPU characteristics, performance factors. Control unit design: hardware and micro-program, microprogramming. Interrupt mechanism. DMA. Pipelining.

Credits : 3; Prerequisite : CSE 255

CSE 370: Electrical Measurement and Instrumentation

Measurement of resistance, inductance and capacitance. Measurement of conductivity of bulk materials. Cable faults and localization of cable faults. Magnetic measurement, ballistic galvanometers, flux meters. Measurement and separation of iron losses. Illumination measurement. High voltage measurements. Instrumentation amplifiers. Transducers: measurement of strain, pressure, temperature and flow. Measuring instruments: classification. Ammeters, voltmeters and multimeters – extension of instrument ranges. Current and voltage transformers. Measurement of power and energy: wattmeters, watt-hour meters and maximum demand indicators. Measurement of speed, frequency and phase difference. Electronic measuring instruments: Oscilloscope, Digital meters – DMM, VTVM, Q meters. Statistical methods in measurements. The course includes lab works based on theory taught.

Credits: 3+1=4; Prerequisite: CSE 109, CSE 251

CSE 380: Digital Electronics

Diode logic gates, transistor switches, transistor gates, MOS gates, Logic Families: TTL, ECL, IIL, and CMOS logic with operational details. Propagation delay, product and noise immunity. Open collector and High impedance gates. Electronic circuits for Flip-Flops, counters and register. Memory system, PLAs and PLDs. A/D and D/A converters with applications. S/H circuits. LED. LCD and optically coupled oscillators. Non-linear applications of OP-AMPs. Analog switches. Linear wave shaping: diode wave shaping techniques, clipping and clamping circuits. Comparator circuits, switching circuits. Pulse transformers, pulse transmission. Pulse generator – monostable, bistable and astable multivibrators. Schmitt trigger. Blocking oscillators and time-base circuits. Timing circuits. Simple voltage sweeps, linear current sweeps. The course includes lab works based on theory taught.

Credits: 3+1=4; Prerequisite: CSE 109, CSE 251, CSE 255

CSE 401: Information System Analysis and Design

Application Development Policy and Strategies: Planning of Information System, Policy in Information System Development, Strategies for achieving Information System goals. Application System Development Life Cycle: Phases in Application System Development, interrelationship among each phase. Feasibility assessment: problems and needs in Information System Development, preliminary application requirement determination, economic, technical operational and schedule feasibility. Information Requirements Determination: Strategies for obtaining information requirements, techniques for information requirements determination, methods for providing assurance that requirements are correct and complete. Structured System Analysis: Steps in Structured System Analysis, Activity Diagrams and related documentation, data dictionary, problem analysis, structured walk through. System Design Methodology: CheckList Methodology, Process-Oriented Methodology, Application Generator, Structured Design. Program Development and Testing: Structured Programming, Method for Testing.

Credits: 3; Prerequisite: CSE 105, CSE 107, CSE 275, CSE 301

CSE 405: Computer Networks

Computer network architectures, protocol layers. Transmission media, encoding systems, error detection, multiplexing, switching. Data link, multiple access channel protocols. Network security, privacy. Applications including network management, electronic mail, virtual terminals, URL, HTTP, Multimedia, distributed operating systems. The course includes lab works based on theory taught.

Credits: 3; Prerequisite : CSE 207, CSE 245, CSE 350

CSE 409: Systems Programming

Differences and similarities in machine organization, central processors. Fundamentals of machine language and addressing. Assembly language programming. Assembler: general design procedure, table processing. Macro language and macroprocessor. Loaders: design of absolute loader and direct link loader. Linkers. Translators.

Credits : 3; Prerequisite : CSE 105, CSE 107

CSE 410: Artificial Intelligence

Artificial intelligence techniques. Logic: propositional logic, first-order logic, resolution principle. Problem representation: state-space representation, problem-reduction representation. Production system: PS structure, recognition-action cycle, inference directions, blackboard systems, PS implementation. Frame representation: basic structure, inheritance of properties, slot extension, implementation. Relational data model: relational database model, entity and relationship, generalization and aggregation. Search: blind and non-blind searches, depth-first search, breadth-first search, heuristic search, best-first search, optimal search, A search. Implementation complexity. Programming Languages for AI Research: Features of AI programming languages. Major AI programming languages – LISP and PROLOG.

Credits : 3; Prerequisite :CSE 105, CSE 107, CSE 207

CSE 411: Software Engineering

Software: Its nature and qualities. Software Engineering Principles: Rigor and formality, separation of concerns, modularity, abstraction, Incrementally. The Software Process: Process models, planning, cost estimation and project control, software design. Modularization: structure, representation, interface and information hiding, design notations. Object-oriented Design: Object paradigm, introduction to a specific object-oriented design technique. Software Specification: Operational specification – semi-formal schemes, asynchronous systems – Petri nets. Descriptive specification – traditional scheme, ER model and logic, introduction to a formal scheme (Z). Software verification, software testing. Software tools and environments.

Credits : 3; Prerequisite : CSE 105, CSE 107, CSE 207, CSE 245, CSE 301

CSE 412: Programming with JAVA

Java and Internet, Java foundation, Control flow, Abstract classes and packages, Exception Handling, Applets, Web based Java application, Multithreading, Network programming, Graphics, Human-Computer Interactio, Risk and liabilities of Computer based Systems, Future Developments. The course includes lab works based on theory taught.

Credits : 3+1=4; Prerequisite : CSE 105, CSE 107

CSE 413: Automata Theory and Theory of Computations

Computational models including finite automata, regular expressions, context-free grammars, pushdown automata, Turing machines, and techniques for analyzing them. Languages described by these machines and their properties. Chomsky Hierarchy. Basic computability theory and Church-Turing Thesis. Undecidability, Post correspondence problem. Fundamentals of computational complexity theory. Intractable problem and NP-completeness. Some NP complete problems. Cook's theorem. Approximation algorithms.

Credits : 3; Prerequisite : CSE 207, CSE 245

CSE 415: Software Development Project

Students will develop large application/database/Internet software(s) with proper documentation as assigned by teacher.

Credits: 3; Prerequisite: CSE 105, CSE 107, CSE 207, CSE 245, CSE 301

CSE 420: Computer Graphics

Introduction to computer graphics. Graphics I/O devices and types. Graphic software design: Desired functions, Universal Graphic language, display files, Databases for pictorial applications. Graphics Techniques: Point-plotting techniques, Line drawing, Geometric transformations, Windowing and clipping, Raster graphics. Hardware for Computer Graphics: Typical small and large system graphic terminals, Plotters, Graphic Display Processors, Device Independent Graphics Systems. Graphics Software: Simple Graphics Package, Segmented Display Files, Geometric Models, Picture structure. Interactive Graphics: Input techniques, event handling, three-dimensional graphics, curves and surfaces, 3-D transformation. Hidden Surface Problem: Back Face Removal, Hidden-Line removal. Curved Surfaces. The course includes lab works based on theory taught.

Credits : 3; Prerequisite : CSE 105, CSE 107, CSE 207, CSE 245

CSE 422: Simulation and Modeling

Simulation methods, model building, random number generator, statistical analysis of results, validation and verification techniques. Digital simulation of continuous systems. Simulation and analytical methods for analysis of computer systems and practical problems in business and practice. Introduction to the development of simulation packages.

Credits: 3; Prerequisite: STA 101, CSE 105, CSE 107

CSE 425: Electrical Technology

Single-phase transformer – equivalent circuits. Three-phase transformers. D.C. generator and motor: operation and characteristics. 3-phase induction motors: types, operations, equivalent circuit, characteristics, starting. Introduction to 3-phase alternators and synchronous motors. Fractional horsepower motors. The course includes lab works based on theory taught.

Credits : 3; Prerequisite : CSE 109

CSE 430: Compiler Design

Introduction to Compilers. Lexical analyzer, Regular expression, Non-deterministic finite automata and deterministic finite automata, Context free grammar, Ambiguous grammar, Parsing techniques, Syntax directed translation, type checking. Intermediate code, Symbol table, Data structure for symbol table, Run time storage administration, Error detection and recovery, code optimization, code generation. Use of tools - LEX and YACC. Design of a compiler for a subset of a programming language.

Credits : 3; Prerequisite : CSE 207, CSE 245

CSE 432: Digital Signal Processing

Discrete time description of signals and systems. Fourier transform of discrete time signals, Discrete Fourier transform. Z-transform. Digital filter structure, Infinite Impulse Response Filter design techniques, Finite Impulse Response Filter design techniques, Finite precision effects, Inverse filtering.

Credits: 3; Prerequisite: MAT 102, MAT 301, CSE 109, CSE 205, CSE 251

CSE 434: Digital Image Processing

Introduction, Digital Image Fundamentals, Image Transform, Image Enhancement, Image Restoration, Image Compression, Image Segmentation, Representation and Description, Recognition and Interpretation.

Credits: 3; Prerequisite: MAT 301, CSE 420

CSE 436: Advanced Computer Architecture

Pipelined processor design, Cache memory, Memory system design, Concurrent processors, Vector processors and multiprocessors, Array processors, Parallelism in multiprocessors and Multicomputers, Compute-intensive processors and Multicomputers, Automatic Vectorization, Hypercube systems and Key application, Data flow computation.

Credits: 3; Prerequisite: CSE 275,CSE 355, CSE 360

CSE 438: Digital Computer Design

Review of MSI logic design, Registers, Counters and Memory units. Register transfer logic, micro-operations, processor logic design, control logic design, micro-Programd control, pipeline and vector processing, computer arithmetic, microcomputer system design: case study.

Credits: 3; Prerequisite: CSE 355, CSE 360

CSE 442: Microprocessors and Microcomputers

Introduction to different types of microprocessors, Architecture, Instruction Format, Instruction Sets, Opcode, Processor status and Flag registers, Addressing modes, Branching and Looping, Interrupt structures, I/O operation, I/O interfacing, DMA. Programming in Microcomputers. Hardware and Software interfacing in Microcomputer System Design, I/O design and total system design. Microprocessor based system design: Hardware design, building, debugging, testing and linking program modules. Programming EPROM. Multiprocessor configurations: coprocessor configurations, numeric data processor, I/O processors. Advanced Microprogramming: Bit-Slice Microprocessor, Parallelism in Microprocessor. The course includes lab works based on theory thought.

Credits: 3+1=4; Prerequisite: CSE 109, CSE 251, CSE 355, CSE 380

CSE 444: Fault Tolerant Computing:

Faults and their manifestation, issues, theory, and techniques of reliable systems design, testing, design for testability, self-checking and fail-safe circuits, coding techniques, system-level fault diagnosis, fault-tolerant communication, reliable software design, and evaluation criteria.

Credits : 3; Prerequisite :CSE 255, CSE 360

CSE 452: Distributed Systems and Algorithms

Formal approaches to distributed computing problems. Topics vary, but typically include models of distributed computing, agreement problems, impossibility results, mutual exclusion protocols, concurrent reading while writing protocols, knowledge analysis of protocols, and distributed algorithms.

Credits : 3; Prerequisite : CSE 245, CSE 275

CSE 460 : Programming Language Principles

A study of non–imperative programming paradigms such as functional, object-oriented, logic, and constraint programming. Programming language semantics and type theory.

Credits : 3; prerequisite : CSE 411, CSE 301

CSE 464 : Advance Database System

Introduction to the principles of database management systems. Topics include database system architecture, data models, theory of database, query optimization, concurrency control, crash recovery, and storage strategies.

Credits : 3; prerequisite : CSE 301

CSE 470: Expert Systems

Basic principles of Expert Systems. Natural Language Processing, Medical diagnostics, Financial design, and Manufacturing planning.

Credits : 3; Prerequisite : CSE 410

CSE 474: Pattern Recognition

Introduction to pattern recognition. General pattern recognition concepts. Statistical pattern recognition. Supervised learning using parametric and non-parametric approaches. Linear discriminant functions and the discrete and binary feature cases. Unsupervised learning and clustering. Syntactic Pattern Recognition: Syntactic recognition via parsing and other grammars, graphical approach to syntactic pattern recognition, learning via grammatical inference. Neural Pattern Recognition: Neural pattern associators and matrix approaches, unsupervised learning in neural pattern recognition.

Credits : 3; Prerequisite : CSE 410

CSE 476: Neural Networks

Introduction to neural networks. Neuronal Dynamics: Activation and signals, activation models. Synaptic Dynamics: Unsupervised and supervised learning. Neural network architectures and equlibria.
Credits : 3; Prerequisite : CSE 410

CSE 478: Stochastic Processes

Probability distribution and expectations, discontinuous probability distributions, continuous probability distributions. Stochastic process. Discrete time Markov chain and continuous time Markov chain. Birth-death process in queuing. Queuing Models.
Credits : 3; Prerequisite : STA 102

CSE 480: Web Database Programming

Designing an Internet utilizing a range of different technologies. Simplifying the creation and updating web content. Expanding Intranet services by adding client-slide and server-side processing. Interfacing Internet to a database. Querying a database using Cold Fusion.
Credits : 3; Prerequisite : CSE 301, CSE 412

CSE 482: Parallel Computation

Survey of parallel computing including the processing modes of pipelining, data parallelism, thread parallelism, and task parallelism; algorithmic implications of memory models; shared memory and message passing; hardware implementations; bandwidth and latency; synchronization, consistency, inter-processor communication; programming issues including implicit and explicit parallelism, locality, portability.
Credits : 3; Prerequisite : CSE 245

CSE 484: Computational Geometry

Problems in computational geometry, worst case complexity of geometric algorithms; expected complexity of geometric algorithms and geometric probability, geometric intersection problems, nearest neighbor searching, point inclusion problems, distance between sets, polygon decomposition, the Voronoi diagram and other planner graph, updating and deleting from geometric structures.
Credits : 3; Prerequisite : CSE 207, CSE 245

CSE 490: VLSI Design

Introduction to microelectronics and MOS technology, Basic electrical properties and circuit design process of MOS and CMOS circuits, Scaling of MOS circuits, Subsystem design process and layout. Computational elements: Design of an ALU subsystem, Adder, Multipliers, Memory, Registers, and aspects of system timing. Practical aspects of design tools and testability, CMOS design: behavioral description, structural description, physical description and design verification, Introduction to GaAs technology: Ultra-fast VLSI circuits and systems.
Credits: 3; Prerequisite: CSE 109, CSE 251, CSE 255, CSE 380

CSE 492: Robotics

Robotic manipulation, direct kinematics: the arm equation, inverse kinematics: solving the are equation, workspace analysis and trajectory planning, differential motion and static manipulator dynamics, robot control, task planning.
Credits: 3; Prerequisite: None

CSE 498: Social and Professional Issues in Computing

History of Computing, Social context of computing, Methods and tools of analysis, Professional and ethical responsibilities, Risks and liabilities of computer-based systems, Intellectual property, Privacy and civil liberties, Computer crime, Economic issues in computing, Philosophical frameworks.
Credits: 3; Prerequisite: None

CSE 499: Internship/Project

Students will be placed for internship of one semester duration or they will be assigned a project under the supervision of a faculty member. Student must complete the internship/project within one consecutive semesters.
Credits : 3; Prerequisite: All required courses

ECO 101: Principles of Microeconomics

Introduction to Economic theory . Theory of price: Demand. Theory of price: Supply. Theory of supply: Market Structure & Theory of Distribution Microeconomic policy in product & factor market.
Credits: 3; Prerequisite: MAT 110 , STA 101

ECO 102: Introduction to Macroeconomics

Macroeconomic is the policy oriented part of economics. Much of our analysis in this endeavor will attempt to reveal how macro- economic variable such national income, unemployment, inflation can be manipulated by government policies. Unlike Microeconomic, hypothesis and results differ substantially in macroeconomic models due to different schools of thought.
Credits: 3; Prerequisite: ECO 101

ECO 200: Agricultural Economics

Introduction of agriculture as an industry; economics of agricultural production, farm management, land economics, rural organization, agricultural credit and finance, agricultural law, agricultural marketing, agrarian reform, agricultural policy, agricultural prices, structure and scope of Bangladesh agricultural sector.
Credits: 3; Prerequisite: ECO 101

ECO 214: Public Sector Economics

The course examines a number of issues in public expenditure theory and taxation. Topics on the expenditure side include the economic rationale for government, provision of public goods, corrective policies to externalities, and cost-benefit analysis. On the taxation side, topics include the question of tax incidence, efficiency effects of taxes and optimal taxation.
Credits: 3; Prerequisite: ECO 101

ECO 260: Environmental & Natural Resource Economics

This course aims at exploring and examining human relationship with environment with special emphasis on Bangladesh. The course surveys the economic, cultural, social, and political aspects of human population dynamics, food resources and hunger, mineral and energy resources, air, land and water pollution, wilderness and wildlife resources, urban and rural land usage, and toxic waste management from environmental and conservation viewpoints. The course makes recommendations and probes possible solutions to contemporary resource and environmental problems of Bangladesh. Current issues important to the environment are stressed in class projects.
Credits: 3; Prerequisite: ECO 101

ECO 301: Intermediate Microeconomic Theory

Theory of choice and its application to consumer and producer behavior, theory of production and cost, output and input markets and their structure, equilibrium and efficiency, introduction to general equilibrium analysis. Special emphasis on perfect & imperfect competetion.
Credits: 3; Prerequisite: ECO 101

ECO 302: Intermediate Macroeconomic Theory

This course introduces the mainstream models in modern macroeconomics-classical models, Keynesian model of consumption and investment analysis; IS-LM models of closed and open economics dealing with unemployment, inflation and interest rates. Analysis of monetary and fiscal policies and their impact on national income, output employment & growth.
Credits: 3; Prerequisite: ECO 102

ECO 304: Economics of Health:

Application of economic concepts and analytical tools to the health service system. Review of empirical studies of demand and supply of health services, behavior of providers in selected developing and developed countries, and relationship of health services to population health levels. Discussion of policy issues relating to financing and resource allocation to the health sector.
Credits: 3; Prerequisite: ECO 101

ECO 310: Money and Banking:

Understanding money, macroeconomic role of money, the role of the banking system in the functioning of monetary policy. Principles of managing commercial banks, efficient loan portfolio management, the history and functions of the central banks.
Credits: 3; Prerequisite: ECO 102, ECO 302

ECO 328: International Trade and Finance.

Review and analysis of international trade models, theories and tools of analysis-classical, neo-classical and alternative theories; international monetary system, its role, importance, structure and future performance; foreign exchange market, balance of payments adjustments.
Credits: 3; Prerequisite: ECO 301 and ECO 302

ECO 329: Contemporary Issues in International Economics:

In depth analysis of selected current issues and policy problems of the international economy including (but not restricted to) the following: new approaches to the theory of international trade, reform of the international monetary systems, role of the General Agreement on Tariffs and Trade and the United Nations Conference on Trade and Development. Problems of stabilization of international commodity markets, and balance of payments problems of Bangladesh and other selected countries.
Credits: 3; Prerequisite: ECO 328 or equivalent

ECO 349: Economics of Development:

Core topics are the nature of underdevelopment, growth theories, dualism, center periphery models & poverty of LDC countries. Process of cumulative causation, population and development, development and environment, foreign assistance, debt, trade are also widely discussed.
Credits: 3; Prerequisite: ECO 101 and ECO 102

ECO 353: Economics of Development in South Asia:

Background and analysis of plans and progress toward economic development in South Asia, their trends in development, economic characteristics of the area and their significance for economic development. Case studies are included on respective countries of South Asia to examine their economic trends & prospects.
Credits: 3; Prerequisite: ECO 101 and ECO 102

ECO 357: Mathematical Economics:

Economic models and equilibrium analysis, linear models and matrix algebra, differentiation and comparative statics, comparative statics of general function models, optimization and equilibrium, exponential and logarithmic functions, multi variable optimization, optimization with equality constraints, economic dynamics and integral calculus.
Credits: 3; Prerequisite: MAT 110, MAT 311

ECO 360: Socio-Economic Profiles of Bangladesh.

It surveys the socioeconomic features and studies of the macroeconomic performance of the economy of Bangladesh within the context of the sociopolitical reality; sectoral development and analysis of the sectors in a general equilibrium framework; foreign trade and foreign aid; financial institutions and monetary management, fiscal policy, human resource development and the long term performance of Bangladesh economy.
Credits: 3; Prerequisite: ECO 101 and ECO 102

ECO 406: International Economic Theory

This course offers advanced treatment of trade models covered in ECO 328 as well as incorporates new developments in international trade theory. Topics include neo-classical trade theory, industrial-organization based trade models, protection theory, regional integration and economic growth. Special attention on export promotion & import substitution policies of the devoloping economics.
Credits: 3; Prerequisite: ECO 301, ECO 302

ECO 414: Trade Policy Analysis:

Applies the theory of international economics to the problems of policy design for export promotion, import substitution, exchange rate choice and management, foreign indebtedness, capital flow and balance of payments management.
Credits: 3; Prerequisite: ECO 328

ECO 433: Gender & Development:

This course examines gender discrimination & gender equality as it relates to economic development. Topics include: success and failures of NCO activities that directly address women's participation in development, womanization of poverty in under developed countries.
Credits: 3; Prerequisite: ECO 349

ECO 443: Social Mobilization, Rural Banking and Community Organization:

This is aimed at analysing the role of grass root organizations and NGO's in development. Their achievements in activities like micro-credit, education and awareness building is discussed. Field trips are an integral part of this course.
Credits: 3; Prerequisite: ECO 349

ECO 447: Applied Economics:

This course analyses some selected issues in regulation and government intervention and their impacts. Advanced topics of macro & micro economics are included.
Credits: 3; Prerequisite: ECO 301

ECO 449: Economics of Information:

Moral hazard, adverse selection in game theoretic models; Individual and social choices under incomplete and imperfect information.
Credits: 3; Prerequisite: ECO 467

ECO 450: Labor Economics:

This course surveys a number of topics in labor economics, including the facts underlying the rising labor participation of women, the effects of legislation such as minimum wages and overtime regulation on wages and employment, the factors that determine wage rates paid to different individuals, and in particular the degree to which observed patterns of wages conform to the predictions of the simple competitive model versus other models of wage determination; the economics of education, discrimination in the labor market, and other selected topics.
Credits: 3; Prerequisite: ECO 301

ECO 460: Managerial Economics:

Scope and nature of managerial optimization, optimization techniques, risk analysis, estimation techniques, demand theory, demand estimation, demand forecasting, production theory and estimation, linear programming, market structure and pricing practice, long run investment decisions, capital budgeting, cost benefit analysis, public sector management.
Credits: 3; Prerequisite: ECO 301

ECO 465: Basic Econometrics:

Main focus is on OLS estimate including: two-variable regression, functional form, multiple regression, rnulticollinearity, heterosecedasticity and autocorrelation, specification errors, dummy variables, lagged variables, identification and systems estimation.
Credits: 3; Prerequisite: STA 327

ECO 467: Advanced Microeconomic Theory:

Advanced treatment of microeconomic concepts. Traditional concepts of theories about production and consumer choice will be discussed with mathematical rigor and special emphasis will be given to market structure, strategic behavior and game theory.
Credits: 3; Prerequisite: ECO 301 and ECO 357

ECO 474: Mathematical Economics II:

Dynamic analysis and its application in economic models : Harrod model, Domar model, Samuelson's multiplier accelerator interaction model. Dynamic Optimization: nature of dynamic optimization. Calculus of variation : Fundamental problem of the calculus of variations-Euler Equation, some special cases & applications of second order conditions, infinite planning horizon, constrained optimization problems, optimal control theory : The mazimum principle, infinite horizon problem, optimal control with constraints
Credits: 3; Prerequisite: MAT 31 1, ECO 301 and ECO 302

ECO 475: History of Economic Thought:

Birth of political economy, laissez faire revolution of Adam Smith, Ricardo to Mill, socialist thought and Marx, neoclassical synthesis ; theory of general equilibrium, welfare economics, Keynesian revolution & Marshall's contribution economic discipline.

Credits: 3; Prerequisite: ECO 101 or ECO 102

ECO 477: Advanced Macroeconomic Theory:

A review of macroeconomic issues, policies and tools. Different schools of macroeconomic thought, long run economic growth, neoclassical and new growth theories. Short run economic fluctuation, modern theories of business cycle, inflation and unemployment. Sectoral analysis, consumption and investment, open economy macroeconomics, macroeconomic issues and problems stemming from Monetarist Counter revolution & Modiglianis life cycle hypothesis.

Credits: 3; Prerequisite: ECO 302, ECO 357

ECO 480: Urban Economics:

Aspects of urban management, location and growth of cities ; system of cities & urban hierarchy, economics of urban management ; management of urban environment ; urban waste management. The structure of the urban government, its fiscal base and linkages with the external sectors : policy issues such as - determination and collection of local taxes, urban enterprise zones, urban land and housing policies, anti-poverty policies and social cost & benefit of externalities.

Credits: 3; Prerequisite: ECO 214

ECO 487: Econometric Methods:

K-variable linear model, OLS Estimators, inference in the OLS model, estimator subject to linear restrictions, dummy variables, multicollinearity, specification error, GLS estimator, heteroskedasticity, autocorrelation maximum likelihood estimators.

Credits: 3; Prerequisite: STA 427, ECO 465

ECO 490: Industrial Organization:

The course revolves around organizational issues such as the structure of markets, theories of ownership, incentives, contracts, coordination using prices, quantities and direction, moral hazard and its organizational consequences, risk sharing and incentive contracts, as well as other property right topics like compensation and motivation within the firm. Additional emphasis will be given on cournot duopoly bertrand model & game theory.

Credits: 3; Prerequisite: ECO 301

ENG 099: Remedial English

This is a Remedial English Program intended for students having difficulties in coping with English as a medium of instruction. The course incorporates components of the basic language skills: Listening, Speaking, Reading and Writing. It will include intensive reading, writing and some listening practices. Special emphasis will be given on writing correct sentences, guided writing, guessing word meaning in context, understanding long sentences, understanding main idea and understanding the gist and details of a reading text. It will also cover items like spelling, forming negatives, guessing word meaning from context, changing word forms and making sentences with them, completing incomplete sentence, making sentences with words from reading pessagees, linking sentences, arranging jumbled sentences, punctuation, correction, reading cloze, reading for specific information, summary writing, free writing, translating from Bangla to English. Every class will have a short free writing task.

Credit: 0; Prerequisite: None

ENG 100: Spoken English

This course is mainly based on speaking. Some listening activities will also be included to stimulate speaking activities. Daily formulaic expression, free conversation and strategies to overcome communicative difficulties, debate, public speaking, formal and informal speaking, questioning techniques, politeness issues, use of social English and euphemistic expressions are the main components.

Credits: 3; Prerequisite: None

ENG 101: Basic English

The course will include most of the items covered in ENG 099, but at an advanced level. It will also include reading, writing, listening and presentation skills. The detailed focus will be on: guessing word meaning from context, changing word forms and making entences with them, completing incomplete sentence, making sentences from words from reading passages, linking sentences, arranging jumbled sentences, punctuation, correction, reading cloze, reading for specific information, summary writing, free writing. The course will also cover techniques of paragraph writing, developing a topic sentence into paragraph, completing an incomplete paragraph, summary writing etc. For reading, the course will cover inferencing, reading for specific information (skimming, scanning), reading cloze, analyzing long sentences etc.

Credits: 3; Prerequisite: ENG 099

ENG 102: Composition and communication skills

The course focuses on generating ideas, drafting, planning, revising, editing and writing further drafts. It covers the following topics: Report writing, Formal letter writing, Summary writing, Generating an essay and Preparing an assignment or a term paper with bibliography, footnotes and appendix.

Credits: 3; Prerequisite: ENG 101

ENG 145: Introduction to Linguistics

The aim of this course is to familiarize students with some basic concepts of Linguistics. The course components are aspects of human language, phonetics & phonology, morphology, syntax, semantics, language & society, language change, brain & language etc.
Credits: 3; Prerequisite: None

ENG 151: Advanced Grammar

The course aims at pointing out differences between the concepts of traditional grammar and modern grammar. It incorporates PS grammar, TG and functional grammar, and covers semantic aspects of modalities and meaning of grammatical categories.
Credits: 3; Prerequisite: ENG 101

ENG 154: English Phonetics and Phonology

The aim of this course is to prepare students to speak English with an acceptable pronunciation and intonation. It includes the description of English consonant and vowel sounds, Phonological rules, Phonemic Transcription, Stress Patterns and intonation in English.
Credits: 3; Prerequisite: ENG 145

ENG 155: Improving Reading and Writing Skills

This course aims at providing extensive practice in reading and writing skills. It is felt that students need help with extensive, intensive, close and critical reading and with writing coherent and cohesive essays and assignments. The reading component of the course will focus on such aspects as guessing of meaning from context, inferential skills, and interpretative skills, and skills for critical evaluation. The writing part will focus on free writing, organizational skills- using linkers, discourse markers, pronoun referencing, subject-verb agreement, drafting, editing and improving drafts.
Credits: 3; Prerequisite: ENG 102

ENG 190: Introduction to Literature

This course introduces students to different genres/forms of literature, and their different aspects. It will include selections from most of the genres of literature: Prescribed Texts : Poems: Andrew Marvell: "To His Coy Mistress"; John Milton: "On His Blindness"; P.B. Shelly: "Ozymandias"; Robert Browning: "Meeting at Night"; Robert Frost: "Stopping by Woods on a Snowy Evening"; Non-Fiction Prose: Desmond Morris: Altruistic Behaviour; George Orwell: Politics and the English Language; Short Fiction: The Ant and the Grasshopper; The Invisible Japanese Gentleman; Novel: R.K. Narayan: The Guide; Drama: J. M. Synge: The Riders to the Sea.
Credits: 3; Prerequisite: None

ENG 195: Rhetoric and Prosody

The course deals with the technicalities of literature. It includes literary terms, figures of speech, rhythm, and metrical patterns and stanza forms among others.
Credits: 3; Prerequisite: None

ENG 204: Concept of ELT

This course introduces students to the nature and scope of English Language Teaching. It covers the theoretical inputs ELT received from Linguistics, Sociology, Psychology and Education for pedagogic and other principles. The course discusses in some detail how ELT derives ideas from Linguistics for defining its content, and from Sociology, Psychology and Education' for deciding about the pedagogic approaches. It outlines the areas ELT covers and discusses the notion of Communicative Competence and, the shifts from 'form' to meaning and skills, and from usage to use in modern language teaching.
Credits: 3; Prerequisite: ENG 145, ENG 207 & ENG 208

ENG 205: History of the English Language

The purpose of this course is to introduce students to the developments in English language. It includes salient features of Old, Middle and Modern English. It also incorporates a comparison between British and American English, as well as a comparison among some non-native varieties of English such as Indian and African varieties.
Credits: 3; Prerequisite: ENG 145

ENG 206: Pragmatics & Discourse Analysis

This course introduces students to speech act theory, conversational maxims, relevance and implicature, communicative events, modality, cohesion, coherence, frames, presupposition and the pragmatics of politeness, topic change, turn taking, interruptions, conversation structure, clarification, repair, face saving and solidarity. It will also focus on spoken and written discourse analysis, contrastive pragmatics, anthropological perspective and cross-cultural communication. By the end of the course it is expected that students will be able to critically analyze spoken interaction and to evaluate written text with particular reference to context, cohesive ties, topic framework, illocution and inference.
Credits: 3; Pre-requisite: ENG 145 + ENG 154

ENG 207: Psycholinguistics

This course emphasizes on the psychological aspects of language learning. It incorporates Child Language Acquisition, Sound System, Phonology, Syntax, Semantics, Interlanguage Theory, Universal Grammar Theory and Cognitive Theory.
Credits: 3; Prerequisite: ENG 145

ENG 208: Sociolinguistics

The aim of this course is to familiarize students with various aspects of Sociolinguistics. The course includes language varieties and standardization, regional and social dialects, geographical distribution and characteristics of pidgins and creoles, bilingualism, code switching/mixing and sociocultural aspects of multi-lingualism.

Credits: 3; Prerequisite: ENG 145

ENG 210: Old and Middle English in Translation

This course contains epics and poetical pieces written in old and Middle English available in modern English translation. Prescribed Texts : Beowulf; Piers Plowman; Adrian and Bardus; Ceix and Alcelone; Chaucer: Prologue to the Canterbury Tales.

Credits: 3; Prerequisite: ENG 190 + 6 other literature courses

ENG 212: Classics in Translation

The aim of this course is to familiarize students with the ancient classics in the form of Greek and Roman plays and epics in translation. Prescribed Texts: Homer - The Iliad ; Virgil - Aeneid; Aeschylus-Agamemnon; Sophocles - Oedipus Rex ; Euripides- Alcestis ; Aristophanes - Frogs

Credits: 3; Prerequisite: ENG-190 + 4 other literature courses

ENG 215: Seventeenth and Eighteenth Century Poetry

This course includes the major poets of this period. Prescribed Texts: Milton: Paradise Lost Bk. I, Donne: Good Morrow, A Valediction forbidding Mourning, Twickenam Garden, Extasie, Canonization; Dryden : Absalom and Achitophel, Pope: Rape of the Lock, Grey: Elegy Written in a Country Churchyard, Blake: Selectionas from Songs of Innocence and Songs of Experience

Credits: 3; Prerequisite: ENG 190 + ENG 195

ENG 220: Victorian Prose and Poetry

The course seeks to show the changes taking place in society. It consists of novels and poems of the era Writers include Newman, Robert Browning, Tennyson and Mathew Arnold. Prescribed Texts: Prose: Newman The idea of a University, Chapters V, VI, and VII, Arnold: Culture and Anarchy, Chapters I & II; Poetry: Tennyson: " Tithonus"; "The Lady of Shallot"; "Tears, Idle Tears"; "The Lotos Eaters"; Selections from "In Memorium"; Browning: Love Among the Ruins; Fra Lippo Lippi; The Last Ride Together; My Last Duchess; Arnold: Dover Beach; The Scholar Gypsy; Thyrsis

Credits: 3; Prerequisite: ENG 190 + ENG 195 + ENG 345

ENG 230: Nineteenth Century Novel

This course includes the major novelists of the time and their representative works. Prescribed Texts: H. Fielding: Tom Jones; Emile Bronte: Wuthering Heights; Jane Austen : Pride and Prejudice; Charles Dickens : Great Expectations; Thomas Hardy : Tess of the D'Urbervilles

Credits: 3; Prerequisite: ENG 190

ENG 301: Elizabethan and Restoration Drama

Students will not only read plays from the two periods but will gain a perspective on the historical, religious and political background of the ages. Texts will include selections from Thomas Kyd, Christopher Marlowe, William Shakespeare, Ben Jonson, and William Congreve. Prescribed Texts: Thomas Kyd: The Spanish Tragedy; Marlowe: Doctor Faustus; Shakespeare: Twelfth Night; Ben Jonson: The Alchemist; Congrave: The Way of the World

Credits: 3; Prerequisite: ENG 190 + ENG 195

ENG 302: Modern Novels

Students will read a number of English novels of the post World War II era. Writers include D.H. Lawrence, William Golding, George Orwell, Virginia Woolf, James Joyce and Joseph Conrad. Prescribed Texts: D H Lawrence : Sons and Lovers; William Golding: Lord of the Flies; George Orwell: Animal Farm; Virginia Woolf : Mrs. Dalloway; James Joyce: Portrait of the Artist as a Young Man; Joseph Conrad: Heart of Darkness

Credits: 3; Prerequisite: ENG 230

ENG 303: Syllabus and Material Design

The purpose of this course is to introduce students to the different types of syllabus such as grammatical syllabus, structural syllabus, notional-functional syllabus, and communicative syllabus. It introduces some of the fundamental considerations of syllabus design such as needs analysis, setting of goals, defining objectives, deciding about pedagogic approach, selecting, grading and sequencing of items, and recommending testing procedures. The courses also covers the basic considerations in selecting, adopting, and designing materials. Some of the checklists will be consulted for evaluation and a unit of materials will also be evaluated. The course will also include lesson planning and task design.

Credits: 3; Prerequisite: ENG 204 + ENG 306

ENG 305: Linguistic Theories

The course discusses the historical developments of Linguistics as a discipline. The course incorporates theories of Saussure, the descriptivists, the Sapir Whorf hypothesis, Functional Linguistics of Prague School, Noam Chomsky's the generative theory, Universal luiguistics, Contextual theory of Malinowski, London school.

Credits: 3; Prerequisite: ENG 145 + ENG 154

ENG 306: Methodology of Language Teaching

The aim of this course is to prepare students as good language teachers by familiarizing them with theoretical and practical aspects of language teaching. The course emphasizes the importance of methodology in language teaching. It critically examines Audiolingual Method, Communicative Method, The Natural Approach, Total Physical Response and Suggestopedia.

Credits: 3; Prerequisite: ENG 145 + 204

ENG 309: Advanced Reading and Writing

Students will be required to study selected literary pieces in order to develop an awareness of the linguistic devices an author employs and the effects they produce. Students will explore different rhetorical modes including narration, description, process, comparison/contrast, classification, cause and effect. The course will also focus on word choice, sentence variety and organization of ideas. Reading will cover such areas as critical reading, finding explicit and implicit relationship between elements of texts, identifying author's attitude and feelings, mood and tone, recognizing bais, interpreting and critically evaluating texts. Writing will focus on style of writing, introducing point of view, using the writer's tone, conventions of referencing and quoting.

Credits: 3; Prerequisite: ENG 155

ENG 310: Shakespeare

The course aims to familiarize students with Shakespeare's craft, technique, use of language and with the rudiments of Shakespearean stage structure through readings of Shakespearean plays and poetry. Texts will include a mixture of Shakespearean tragedy, comedy, history plays, the problem plays and selected sonnets. Prescribed Texts : Macbeth, Othello; Julius Caesar; Twelfth Night; Five Selected Sonnets

Credits: 3; Prerequisite: ENG 301 + at least 8 other courses

ENG 316: English for Specific Purposes

This course aims at introducing students to teaching English for specific purposes such as English for academic purposes, occupational purposes, Engineering, English for business studies etc., so that they can develop themselves as good ESP teachers.

Credits: 3; Prerequisite: ENG 303 + ENG 306

ENG 319: Translation Studies

This course introduces students to the methods and mechanism of translation from vernacular to foreign language or vice versa. This is mostly a practice-based course and so students will be required to choose a book for translation over the semester. A teacher will be closely monitoring their progress and providing guidance. Some relevant reading articles will also be selected for their theoretical grounding so that they can have theoretical knowledge underpinning translation as a skill.

Credits: 3; Pre-requisite: ENG 155 + ENG 309 + at least 5 literature courses

ENG 330: English Prose from Bacon to Lamb

The course consists of prose writings from the Elizabethan age to the Nineteenth Century.It includes selected writings of Bacon, Addison and Steele, Swift, Boswell and Lamb. Prescribed Texts; Bacon: "Of Studies", "Of Great Place", "Of Truth", "Of Friendship"; Addison and Steele: Selections from the Spectators Boswell's Life of Dr. Johnson; Swift: Gulliver's Travels; Charles Lamb: Selections from Essays of Elia.

Credits: 3; Prerequisite: ENG 190

ENG 335: Teaching Language through Literature.

The purpose of this course is to familiarize students with some techniques of using literature for language skills training. The course will discuss some of the ideas both for and against the use of literature in language teaching, and how literature might prove an effective tool for training English listening, speaking, reading and writing skills.

Credits: 3; Prerequisite: ENG 204, +ENG 306

ENG 345: Romantic Poetry

The course includes selections from the Romantic poets. Poets will include Wordsworth, Coleridge, Shelley, Keats and Byron. Prescribed Texts; Wordsworth : "Tintern Abbey"; "Ode on the Intimations of Immortality"; "London 1802"; "The World is too much with Us"; "Three years She Grew in Sun" and Shower"; Coleridge: "The Rime of the Ancient Mariner"; Kubla Khan"; PB Shelly : "Ode to the West Wind", "To a Skylark, Adonais"; Keats: Ode to a Nightingale, : "Ode on a Grecian Urn", "Ode to Autumn", "Ode to Melancholy,On First Looking into Chapman's Homer"; "Byron : Manfred".

Credits: 3; Prerequisite: ENG 215

ENG 410: Continental Literature

The course aims at familiarizing students with some major writers of Continental Literature. It includes works of Flaubert, Tolstory, Bretcht, Pirendello, Baudelaire and Rilke.

Credits: 3; Prerequisite: At least 6 literature courses

ENG 412: Techniques of Teaching English Language Skills

This course aims at familiarizing students with different techniques of teaching listening, speaking, reading and writing skills to help develop their efficiency in teaching English language skills. The course will require students to do practice teaching also.

Credits: 3; Prerequisite: ENG 204 + ENG 207 + ENG 306

ENG 413: Language Testing and Evaluation

This course introduces students to the different types of language tests- placement, diagnostic, proficiency, achievement, norm-referenced and criterion referenced tests. It also discusses some fundamental considerations in language testing such as reliability, validity, (face validity, content validity, construct validity etc.), and administrability. It trains students to evaluate the tests and design reading, writing, speaking and listening tests.

Credits: 3; Prerequisite: ENG 204 + ENG 207 + ENG 306

ENG 414: Research Methodology in ELT

This is an advanced course that aims at introducing students to the approaches and methods of ELT research so that they can understand the problems of English language teaching in Bangladesh and recommend some solutions to those problems. It introduces students to the different areas and different types of ELT research such as qualitative research, quantitative research, experimental research, case studies and action research. It talks about setting a research program, doing literature review, designing research tools which includes tools for questionnaire survey for interviews and classroom observation, data processing and analysis, and presenting the result. It also introduces students to statistical concepts such as central tendency (mean, median, mode), distribution (standard deviation, normal distribution curve etc).

Credits: 3; Prerequisite: ENG 204 +ENG 207 + ENG 303 + ENG 306 & ENG 335

ENG 415: Language Policy and Planning

The purpose of this course is to introduce students to the important issues and considerations in language policy and planning. It considers the nature and function of 'official' languages and the relationships between languages and identity and pluralism – assimilation issues. Students will have to study language policy of some other countries, examine the language policy of Bangladesh and come up with new ideas for planning an effective language policy for Bangladesh.

Credits: 3; Prerequisite: ENG 208

ENG 417: Problems & Prospects of ELT in Bangladesh

This course provides an overview of the present state of ELT in Bangladesh and seeks to help students find out the means to resolve it. It closely examines classroom methodology, curriculum and testing across primary, secondary and higher secondary levels of English teaching and learning. Students will also be made familiar with some ELT projects like PERC, ELTIP and American Peace Corps initiative for the improvement of English language teaching and learning in Bangladesh.

Credits: 3; Prerequisite: ENG 208

ENG 420: American Literature (1620-1891)

The course covers the earliest writings in American literature starting from the colonial period to the 19th century. Writers include Nathaniel Hawthorne, Henry Wadsworth Longfellow, Henry David Thoreau, Henry James, Mark Twain and Whitman. Prescribed Texts; Melville: Billy Budd; M. Twain: Tom Swayer; N. Hawthorne: The Scarlet Letter; H .W. Thoreau: Walden; Whitman: Song of Myself; "When Lilacs Last in the Dooryard Bloomed"; Henry James: Portrait of a Lady.

Credits: 3; Prerequisite: ENG 190 + at least 6 other literature courses

ENG 425: American Literature (Modern to Contemporary)

The course will introduce students to the themes, ideas, and values prevalent in American literature of post World War II to contemporary times. Writers will include Robert Frost, Eugene O'Neill Earnest Hemingway,and Emily Dickinson. Prescribed Texts; Robert Frost: Selected poems from the Norton Anthology; Dickinson: Selected Poems from the Norton Anthology; Eugene O'Neil: Long Day's Journey into Night, Morning becomes Electra; Hemingway: The Sun also Rises

Credits: 3; Prerequisite: ENG 420+ at least 8 other literature courses.

ENG 430: Cultural Studies

The course will deal with writings on cultura from older times to modern cultural studies. Writers include Mathew Arnold, Simon During, Roland Barthes, Stuart Hall, Cornel West and Edward Said.

Credits: 3; Prerequisite: Completion of at least 8 literature courses

ENG 435: Postcolonial Theory and Literature

Students will interrogate the category of postcolonial theory and literature to discern the pitfalls of using such a broad terminology. They will also enquire into the different forms of literature and writing that can be encompased within this category. Theory and Literature texts will include selections from Leela Gandhi, Edward Said, Homi Bhabha, Sara Suleri, Gayatri Spivak, Chandra Mohanty Talpade,Salman Rushdie. Chinua Achebe, R.K. Narayan, Meena Alexander and Bharati Mukherjee.

Credits: 3; Prerequisite: Completion of at least 12 literature courses

ENG 436: ELT Research Project

The purpose of this course is to give some practical training in doing ELT research. Students do a mini research project in any one of the following areas under a teacher's guidance: a) Needs analysis b) Designing a communicative syllabus. c) Evaluating a syllabus d) Evaluating materials and designing materials. e) Evaluating teaching. f) Evaluating tests and designing reading, writing, speaking and listening tests g) Learner's learning style preferences h) Learner's beliefs and expectations.
Credits: 3; Prerequisite: ENG 414

ENG 438: Literary Criticism

This course introduces students to some of the fundamental ideas of literary criticism. It examines the different views about literature. Prescribed Texts; Aristotle: Poetics; Johnson: "Preface to Shakespeare"; Dryden: "An Essay on Dramatic Poesie"; Wordsworth: "Preface to Lyrical Ballads"; Arnold: The Study of Poetry.
Credits: 3; Prerequisite: Completion of at least 10 literature courses

ENG 440: Literary Theory

The aim of this course is to familiarize students with different literary theories. The course includes selected works of Freud, Cleanth Brooks, E M Forster, M H Abrams, R Barthes, William Wordsworth, Fish, Said, Kora Kaplan and T S Eliot.
Credits: 3; Prerequisite: ENG 438 + 12 other literature courses

ENG 445: Modern Poetry

Students will deal with the complexities of modernism and related issues. Poets include T S Eliot, W.B. Yeats,Ted Hughes, Sylvia Plath, Dylan Thomas and W.H. Auden. Prescribed Texts; W. B. Yeats: "Sailing to Byzantium"; "Wild Swan at the Coole"; "The Second Coming"; "An Irish Seaman foresees his death"; "Easter 1916". T.S.Eliot: "Love Song of J.Alfred Prufrock"; Portrait of a Lady; The Waste Land. W. H. Auden: Selections from The Norton Anthology, Ted Hughes: Selections from the Norton Anthology, Sylvia Plath: Selected Poems, Dylan Thomas: Selected Poems.
Credits: 3; Prerequisite: ENG 220+ at least 7 other literature courses

ENG 450: Modern Drama

In this course students will be familiarized with modern drama. Writers include G. B. Shaw, J. M. Synge, Samuel Beckett, George Osborne and Harold Pinter. Prescribed Texts; G.B. Shaw: Man and Superman; J.M.Synge: Playboy of the Western World; Samuel Becket: Waiting for Godot; George Osborne: Look Back in Anger; Harold Pinter: Birthday Party
Credits: 3; Prerequisite: ENG 301 & ENG 310

ENG 455: Comparative Literature

This course includes non-English writers like R K Narayan, V S Naipaul, Arundhuti Roy, Chinua Achebe, Wole Soyinka, Naquib Mahfuz, and Nadine Gordimer.
Credits: 3; Prerequisite: Completion of at least 12 literature courses

FIN 101: Principles of Finance

Study of issuance, distribution and purchase of financial claims including the topics of financial management, financial investments and financial markets.
Credits: 3; Prerequisite: STA 101, MAT 110

FIN 201: Business Finance

The principle problems of managing the financial operations of an enterprise. Emphasis upon analysis and solution of problems pertaining policy decisions.
Credits: 3; Prerequisite: FIN 101

FIN 335: Financial Institutions and Markets

An understanding of money and capital markets and financial instruments traded in these market and the discussion of major financial institutions are the major focus of the course.
Credits: 3; Prerequisite: ECO 102 FIN 201

FIN 350: Real Estate Finance

Focuses on theory and practice in real estate, with social, legal and economic implication. Topics of this course are administration of real estate mortgage, source and uses of mortgage funds, permanent and secondary financing and an overview of lease financing.
Credits: 3; Prerequisite: FIN 201

FIN 380: Management of Commercial Bank

This course is designed to provide the students with tools and techniques to manage commercial banks. the content of the course included: performance evaluation of a bank, asset-liability management, management of various kinds of risks, such as interest rate risks, and fund management and investment management.
Credits: 3; Prerequisite: FIN 201

FIN 408: Financial Analysis and Control

This course offers techniques for analyzing income statement and balance sheet of a firm. On the basis of the analysis, managers are to detect the deviation on difference of financial performance. It also focuses on the managerial applications of financial statement analysis of a firm and implements their results as a means of control.
Credits: 3; Prerequisite: ACT201, FIN 201

FIN 410: Risk Management and Insurance

Examines the management of non-speculative risks in the business enterprise with emphasis on insurance as a tool. Topics included are concept of risk and insurance, risk analysis, treatment of risk control and financing, analysis of risk contracts in the areas of life, health, property and liability insurance.

Credits: 3; Prerequisite: FIN 201

FIN 425: Investment Analysis and Management

Survey of the problems and procedure of investment analysis and management. Types of investment risks, analysis of investment problems regarding the corporation as well as individuals.

Credits: 3; Prerequisite: FIN 201, MAT311, STA327

FIN 435: Managerial Finance

Examines in details the investment, financing and dividend policies of a corporation and their inter-relatedness. Topics included discussion of a debt policy, debt about dividend puzzle, interaction between investment and financing decisions and market for corporate control.

Credits: 3; Prerequisite: FIN 201

FIN 450: Cases in Financial Management

This course would provide the opportunity to learn the real tool through analyzing the real cases in the real world set up. This will increase the horizon of student's thinking process about financial matters in depth. Case studies affecting the financial policies and position of the business unit, analysis of the financial problems, determination of alternatives and managerial decision making.

Credits: 3; Prerequisite: FIN 201

FIN/ITB 465: International Financial Management

Analyzing the form and tools of international financial transactions at an advanced level. Topics included are managing exchange rate, capital raising and investment decisions through international financial markets and other related issues.

Credits: 3; Prerequisite: FIN 201

FIN 475: Option and Future

Study of modern concepts and issues in financial options and futures markets. Emphasis on risk management in financial institutions and applications in corporate finance and fund management.

Credits: 3; Prerequisite: FIN 425

GEN 201: Bangladesh Studies

This course attempts to introduce the students to the basic socio-economic, cultural, historical, political , administrative and historical features of Bangladesh. The course also aims to encourage the critical thinking of the students to write short papers on issues associated with development and governance in Bangladesh.

Credits: 3; Prerequisite: ENG 102

GEN 202: Eastern Culture and Heritage

The objective of this course is to introduce students to the culture and civilization of eastern part of the world. The specific objective is to make the students familiar with the major races, religious philosophy, cultural heritage and scholars of this region.

Credits: 3; Prerequisite: None

GEN 203: Ecological System and Environment

Topics include : Environment science, input reduction, population bomb, resources, ecology and population, abundance control, community diversity, energy flow, type of species, demography, resource management, biodiversity, pollution , controlling pollution, water pollution, air pollution, ethics.

Credits: 3; Prerequisite: None

GEN 204: Western Thought

The aim of this course is to introduce students with some masterpieces of Western literature. The course includes selections from William Shakespeare, Charles Dickens, Anthon Chekov, Guy de Mupassant, Robert Frost and T.S.Eliot.

Credits: 3; Prerequisite: None

GEN 205: Introduction to Psychology

The objective of this course is to provide knowledge about the basic concepts and principles of psychology pertaining to real-life problems. The course will familize students with the funamental processes that occur within organism-biological basis of behaviour, perception, motivation, emotion, learning, memory and forgetting and also to the social perspective-social perception and social forces that act upon the individual.

Credits: 3; Prerequisite: ENG 099 or equivalent

GEN 206: Introduction to Sociology

The objective of this course is to introduce students to key societal concepts, primary social institutions, social structure and stratification, religion and so on. They will also be familiar with the methods and different techniques of social research.

Credits: 3; Prerequisite: None

GEN 207: Industrial Psychology

The objective of this courses is to provide knowledge about human behavior in those aspects of life that are related to the production, distribution and use of the goods and services of our civilization. This course will also help to the application of pertinent information about human behavior to the solution of human problems in the industrial context.

Credits: 3; Prerequisite: ENG 099 or equivalent

GEN 208: Introduction to Philosophy

Topics include: Definition of philosophy, function of philosophy, relation of philosophy to religion & science, methods of philosophy, theories of the origin of knowledge, criterion of truth, nature of mind, theories of mind body relationship, the problem of value, nature, scope and utility of ethics.

Credits: 3; Prerequisite: None

GEN 209: Social Psychology

Topics include: Introduction, socialization, social perception, attitude, communication, interpersonal attraction . social influence, mass communication and collective behavior.

Credits: 3; Prerequisite: None

GEN 210: International Relation

Topics include: Fundamental theories of international politcs, Elements of national power and prestige, Treaty of Versailles4 and the turmoil in Europe. Beginning of the Cold War (1945-1952). kennedy and the "Flexible Response"(1960-1963). Root cause of Arab-Israeli conflict. Nixon – Kissinger and the Triangular Diplomacy (1970-1974) . Carter and the "Human Rights" foreign policy. American Foreign Policy (1980-1990). Bangladesh in post Cold War World order(1992-present).Major Civilization of the World (Universal or local). War and peace in post – Cold War World. Theoretical concepts of Diplomacy.

Credits: 3; Prerequisite: ENG 102

ICE 105: Computer Fundamentals & Programming Language

Computer Fundamentals: Evolution of computers, number systems and different computer codes, Boolean algebra and logic circuits, computer memory, input-output devices, CPU, operating systems and applications, computer networks, introduction to Internet, E-mail, E-Commerce, WWW, WAP, HTML, etc; Programming Language: Concept of programming language and its classification; Structured Programming using C: Constants, variables and data types, arithmetic and logical operation, loops and decision making, user-defined functions, character and strings, arrays, pointers, structures and unions, file management, graphics programming

The course includes lab works based on theory taught.

Credits: 3+1=4; Prerequisite: None

ICE 107: Object Oriented Programming with C++

Object Oriented Concepts: Classes, objects, methods, inheritance, and class methods; OO Design Techniques: Booch class diagrams, object interaction diagrams, event-based software; OO Programming in C++: Classes and objects,, dynamic storage, input/output classed, operator overloading, inheritance, class and member functions and data, scope rules for members.

The course includes lab works based on theory taught.

Credits: 3+1=4; Prerequisite: ICE 105

ICE 206: Discrete Mathematics & Numerical Methods

Discrete Mathematics: Mathematical logic: propositional calculus, predicate calculus. Permutations, Combinations and Discrete Probability. Set theory: sets, relations, partial ordered sets, functions. Graph theory: graphs, paths, trees. Recurrence Relations and Recursive Algorithms. Algebraic structures: binary operations, semi groups, groups, permutation groups, rings and fields, lattices; Numerical Methods: Solutions of polynomials and transcendental equations, Interpolation and polynomial approximation, Least square approximation, Solutions of systems of linear equations, Gauss elimination technique, Gauss-Siedel iteration technique, Numerical differentiation and integration, Numerical solutions of ordinary and partial differential equations.

The course includes lab works based on theory taught.

Credits: 3; Prerequisite: ICE 105, MAT 102

ICE 208: Data Structures & Algorithms

Abstract data types and data structures, Classes and objects, Complexity of Algorithms: worst case, average case, and amortized complexity. Algorithm analysis. Algorithm design paradigms. Lists: stacks, queues, implementation, garbage collection. Dictionaries: Hash tables, binary search trees, AVL trees, red-black trees, splay trees, skip-lists, B-trees. Priority queues. Graphs: Shortest path algorithms, minimal spanning tree algorithms, depth-first and breadth-first search. Sorting: Advanced sorting methods and their analysis, lower bound on complexity, order statistics.

The course includes lab works based on theory taught.

Credits: 3+1=4; Prerequisite: ICE 107

ICE 211: Electrical Circuits & Networks

Circuit Concepts: Active Circuit Elements: Voltage Sources, Current Sources; Passive Circuit Elements: Resistors, Inductors, and Capacitors with their properties; Sign Conventions; Ohm's Law; Network Theorems and Circuit Analysis: Introduction; Kirchhoff's laws: Kirchhoff's Voltage Law (KVL), Kirchhoff's Current Law (KCL); Determination of Sign; Analysis Methods: Branch Current Method, Mesh Current Method; Delta-Star and Star-Delta Transformation; Maxwell's Loop Current Method;

Superposition Theorem; Thevenin's Theorem; Norton's Theorem; Maximum Power Transfer Theorem; A.C. Fundamentals: Equations of Alternating Voltages and Currents; Cycle, Time Period, Frequency and Amplitude of a Wave; Phase Difference; RMS and Average Values; A.C. through Resistance only; A.C. through Inductance only; A.C. through Capacitance only; Series and Parallel A.C. Circuits: A.C. through Resistance and Inductance; A.C. through Resistance and Capacitance; Series R-L-C Circuit; Resonance in R-L-C Circuits; Bandwidth of Resonance Circuit; Parallel A.C. Circuits; Simplification of Parallel R-L-C Circuits; Poly Phase Circuits: Two-Phase system; Three-Phase System; Star Connection System; Delta Connection System; Balanced Star-Delta and Delta-Star Conversations; Transients: Types of Transients; Transients in R-L Circuits (D.C and A.C); Transients in R-C Series Circuits (D.C. and A.C).

The course includes lab works based on theory taught.

Credits: 3+1=4; Prerequisite: MAT 101, PHY 101

ICE 212: Basic Electronics & Devices

Introduction to Semiconductor Physics: Energy band gap; Intrinsic and extrinsic semiconductors; Mobility; Drift velocity; N and P type semiconductors; PN junction diodes and their V-I characteristics; Zener diode; Varactor diode; Thermistor and photodiode; Diode Circuits: Ideal rectifier concept; Half wave and full wave rectifiers; Filters; Voltage regulators; Voltage doubler; Clippers; Clampers; Bipolar Transistor: CE, CB and CC configurations; Biasing; Operating point; Load lines (AC and DC); Current gain, voltage gain, power gain; Input impedance; Output impedance; Analysis of small signal low-frequency transistor amplifier by using h-parameters; FET: Types of FET; Construction; Characteristic curve; Principle of operation; Channel conductivity; Channel Ohmic and pinch-off region; Characteristics parameter of the FET; Effect of temperature on FET; Common source AC amplifier; Common drain amplifier; Depletion type and Enhancement type MOSFET; Filters: Properties of symmetrical networks; Characteristics impedance; Filter fundamentals; Different types of filters; Constant – K and m – derived filters; Design conditions; Uses, Active Filters; Optoelectronic Devices: PN photodiode; Phototransistor; Solar cell; Photoconductive cell; Photovoltaic sensors; LED; LCD; Alghumeic display; Photocouplers; High speed optical detectors; Semiconductor Devices: Working principle and application of tunnel diode, Thyristor, SCR, UJT, Diac and Triac; Semiconductor sensors and detectors; Microwave transistors; PIN diode switches; IMPATT and BARITT diodes; Microelectronics: Microelectronics technology; Planer processor; Bipolar transistor fabrication; FET fabrication; CMOS technology; Monolithic diodes; Metal semiconductor contact; IC resistor and capacitor; IC packaging; Characteristics of IC components; Microelectronic circuit layout; Printed circuit board.

The course includes lab works based on theory taught.

Credits: 3+1=4; Prerequisite: ICE 211, PHY 102

ICE 214: Electronic Circuits

Power Amplifiers: Classification of power amplifiers; Collector efficiency; Transformer coupled class A amplifier; Class B Push-Pull amplifier; Class C amplifier; Tuned amplifier; Low-frequency Amplifiers: Effect of emitter bypass capacitor; Effect of coupling capacitors; Cascading of CE stage; Mid-frequency gain; Low-frequency response of cascaded stages; Transformer coupled amplifier; High-frequency Amplifiers: High-frequency model for CE amplifier; CE short circuit current gain; High-frequency current gain with resistive load; High-frequency response of cascaded CE stages; Transformer coupled amplifier; Transistor noises; Feedback and Oscillators: Concept of feedback; Negative feedback; Positive feedback; Voltage feedback; Current feedback; Effect of feedback on impedance gain, gain, bandwidth and distortion; Stabilization; Positive feedback; Condition of oscillation; RC Phase shift oscillators; Wein bridge oscillators; Resonant circuit oscillators; Crystal oscillators; Waveform generators; Operational Amplifiers: Difference amplifier; CMMR; Ideal operational amplifier; Inverting amplifier; Non-inverting amplifier; General-purpose IC operational amplifier; Integrator; Differentiator.

The course includes lab works based on theory taught.

Credits: 3+1=4; Prerequisite: ICE 212

ICE 301: Database Management Systems

Design of database kernels; Query optimization, (rewriting techniques, access methods, join algorithms, plan evaluation), transaction management (ARIES); Distributed databases (query processing and optimization, concurrency control, commit protocols); Object-relational databases (motivation, design & implementation); Spatial databases (storage, indexing techniques, query optimization); Data mining (association, classification and sequence rules, integration with database engines); Data warehousing (star and snowflake schemes, data cubes, view maintenance); Semi-structured and Web databases (data models, query systems, XML, XML-schema, relational storage, compression); Mobile databases (broadcast disks, indexing techniques); Applications to E-commerce.

The course includes lab works based on theory taught.

Credits: 3+1=4; Prerequisite: ICE 208

ICE 303: Signals & Systems

Continuous and discrete time signals, Fourier series, Fourier transform, Laplace transform, Z transform, signal spectra, bandwidth, impulse response, random signals and noise, signal space, random processes, Gaussian random process, joint processes and correlation techniques, response of systems to random signals, random LTI systems, pole-zero concept, FIR and IIR systems, filter synthesis (LPF, BPF, and HPF), topological description and analysis.

The course includes MATLAB-based lab works based on theory taught.

Credit: 3+1=4; Prerequisite: ICE 211, MAT 301

ICE 310: Electromagnetic Theory

Maxwell's equations, displacement current, equation of continuity, boundary condition. propagation of uniform plane waves in perfect dielectric and in lossy medium, reflection, refraction, phase and group velocities, transmission line: evaluation of line parameters, design concepts, cutoff frequency, attenuation, dispersion, power handling capacity, traveling waves, standing waves, Smith chart and matching techniques, pulse propagation, radiation concept: elementary dipole, half-wave dipole, radiation patterns, gain, pattern multiplication, basic antennas.

Credits: 3; Prerequisite: MAT 102, PHY 101

ICE 311: Digital Electronic Circuits

Switching algebra, minimizing functions using maps, different logic families, TTL, ECL, NMOS, CMOS, pass transistor logic, combinational logic circuits:- adders/subtractor, demultiplexers, encoders, decoders, ROMs, PLAs etc. sequential logic circuits:- flip flops and latches, shifters, counters, finite state machine – state transition diagrams and state transition tables, memory elements:- ROM, PROM, RAM-SRAM, DRAM. case studies: a simple computer, RTL – micro-instruction, instruction decoders timing and controller circuits, data path unit. The course includes lab works based on theory taught.

Credits: 3+1=4; Prerequisite: ICE 214

ICE 312 Analog Communications

Introduction to communication systems, signals and spectra, electromagnetic spectrum and its usage, communication channels and propagation characteristics, amplitude modulation and demodulation - spectra, circuits and systems, frequency modulation/demodulation, frequency division multiplexing, radio transmitters and receivers, sampling theory, pulse modulation and demodulation – spectra, circuits and systems, circuit noise, performance of analogue communication systems in AWGN and fading channels.

The course includes lab works based on theory taught.

Credits: 3; Prerequisite: ICE 214, ICE 303

ICE 314 Digital & Data Communications

Introduction to digital signals and systems, spectra and bandwidth. A-D conversion and quantization. PCM, Log-PCM, DPCM, ADPCM, DM, ADM, and LPC for speech signals, time division multiplexing, digital hierarchy and standards, baseband transmission, data regenerators and clock recovery, inter-symbol interference, equalizers, digital modulation and demodulation – binary and M-ary ASK, FSK, GMSK, PSK, DPSK and their spectra, circuits and systems, carrier recovery, performance of digital modulation systems, spread spectrum concept, bandpass representation of noise, optimum and Wiener filter theory, matched filters, optimum signal detection and optimum receiver, elements of information theory and coding. The course includes lab works based on theory taught.

Credits: 3+1=4; Prerequisite: ICE 311, ICE 312

ICE 320: RF & Microwave Engineering

S-matrix representation, resonators, filters, waveguides and planar structures, design concepts, attenuation, dispersion, power handling capability; passive components: non-reciprocal components etc. microwave sources: magnetron, TWT, BWO, IMPATT & GUNN, microwave systems and antennas, micro strip lines, magic tee.

This course includes lab works based on theory taught.

Credits: 3+1=4; Prerequisite: ICE 214, ICE 310

ICE 325: Computer Organization and Operating Systems

Computer Organization: Computer arithmetic, point representations, introduction to CISC processor architecture, instruction set and addressing modes, hardware design principles polling of processors, memory types & interfacing & timing I/O handling, interrupts & DMA & device interfaces – CRT, floppy disk, HDD, optical disk, serial interfaces & data acquisition, software interrupts, memory hierarchy and virtual memory, multiprocessors concept, cache memory, pipelining and introduction to RISC processors, super scalar processors; Operating Systems: Operating system concepts & architectural support – privileged mode; operating system design and construction techniques; WINDOWS operating system, concepts of LINUX/UNIX operating systems; kernels; NOS;

The course includes lab works based on theory taught.

Credits: 3; Prerequisite: ICE 105, ICE 311

ICE 327: Network Programming with Java

Introduction to networking and internet protocols, Complete coverage of the Java networking and I/O APIs, Details of multithreading and exception handling, Byte, Character, Object and Message streams, IP, TCP, UDP, Multicast, HTTP, RMI, CORBA and Servlets, Ping, Fingers, Clients and Servers, Mail Server, Pop-up Server, SMTP Server, SAMBA Server, DNS Server; Multiprotocol chat systems and whiteboards.

This course includes lab works based on theory taught.

Credits: 3+1=4; Prerequisite: ICE 208

ICE 402: Web Page Development & Management

The course will address on how to develop World Wide Web (WWW) and navigate the web. An overview of Hypermedia, Information retrieval, SGML and HTML, elements of web pages, Manipulating text, Use of graphics etc. The structure and genealogy of the internet will be addressed and a brief idea about web page hosting and promotional tools of WWW, Legal and ethical considerations of web based applications, data security, writing applications for the client end, Communication with server scripts and databases for processing, Issues in platform independent client applications will also be given. The course includes lab works based on theory taught.

Credits: 3; Prerequisite: ICE 107

ICE 403: System Analysis & Design

Application Development Policy and Strategies: Planning of Information System, Policy in Information System Development, Strategies for achieving Information System goals; Application System Development Life Cycle: Phases in Application System Development, interrelationship among each phase; Feasibility assessment: problems and needs in Information System Development, preliminary application requirement determination, economic, technical operational and schedule feasibility. Information Requirements Determination: Strategies for obtaining information requirements, techniques for information requirements determination, methods for providing assurance that requirement are correct and complete; Structured System Analysis: Steps in Structured System Analysis, Activity Diagrams and related documentation, data dictionary, problem analysis, structured walk through; System Design Methodology: CheckList Methodology, Process-Oriented Methodology, Application Generator, Structured Design; Program Development and Testing: Structured Programming, Method for Testing.

Credits: 3; Prerequisite: ICE 107

ICE 404: Software Engineering

Software: Its nature and qualities. Software Engineering Principles: Rigor and formality, separation of concerns, modularity, abstraction, incrementally. The Software Process: Process models, planning, cost estimation and project control, software design. Modularization Structure, representation, interface and information hiding design notations. Object-Oriented Design: Object paradigm, introduction to a specific object-oriented design technique. Software Specification: Operational specification – semi-formal schemes, asynchronous systems – Petri nets, Descriptive specification – traditional scheme, ER model and logic, introduction to a formal scheme (Z). Software verification, software testing, Software tools and environments.

The course includes lab works based on theory taught.

Credits: 3; Prerequisite: ICE 301

ICE 405: Communications Languages & Software

The course will cover Socket programming, NS2/OPNET, basic Linux/Unix, and other network languages and software to control and setup network connections.

The course includes lab works based on theory taught.

Credits: 3; Prerequisite: ICE 327

ICE 406: Telecommunications Hardware/Software Interfaces

This course should cover the telecommunications signals and their BER/SNR measurements, hardware and bus/wire/pin configurations of telecommunications equipments, e.g., configurations of modems, computers, modulators/demodulators, filters, amplifiers, telephone handsets, laptop computers, mobile handsets, antennas, satellite/mobile/wired connections with terminal equipment, and testing of these devices and the software that are used to control these hardware.

The course includes lab works based on theory taught.

Credits: 3; Prerequisite: ICE 327

ICE 410: Optoelectronics & Photonics

Nature of light, basic optical laws and definitions, fiber types, fiber attenuation and dispersions, numerical aperture, modes, elementary discussion of propagation in optical fibers, the manufacture and assessment of silica fibers and cables. LED's: structures, light sources materials, efficiency. Laser diodes: structures and threshold conditions, modulation capability, light source linearity, noise, pin photodetector, avalanche photodiodes, noise, response time. Features of optical integrated circuits, theory of optical waveguides, waveguide fabrication techniques, losses in optical waveguides, integrated optical devices, components of the optical fiber link, modulation, multiplexing and coupling, system performance, receiver, sensitivity, coherent optical communications. LCD, CCD, luminescent screens, radar tubes, kinescopes, storage tubes, camera tubes.

The course includes lab works based on theory taught.

Credits: 3; Prerequisite: ICE 214

ICE 411: Digital Signal Processing

Signal representation using unitary transforms, DFT, DCT, Haar and Walsh Hadmard transform, properties of DFT, circular convolution, linear convolution using DFT, overlap add and save methods, FFT, filter structures for IIR and FIR filters, direct form I and II, parallel and cascade forms, frequency sampling structure for FIR filters, linear phase FIR filters, digital filter design techniques, IIR filter design by impulse invariance and bilinear transformation, transformation of digital filters, FIR filter design using windows, MATLAB based examples, introduction to multirate DSP, decimation and interpolation, polyphase decomposition, uniform DFT filter banks, quadrature mirror filters and perfect reconstruction, introduction to finite register length effects on digital filter performance, spectral estimation.

The course includes lab works based on theory taught.

Credit: 3; Prerequisite: ICE 314

ICE 412: Wireless & Mobile Communications

Evolution of mobile cellular communication, concept of cell and reuse pattern, RBS, MTSO, cell sectoring, cell splitting, roaming, handoff, forced termination, FCA and DCA technique, standards of GSM, GSM architecture, HLR, VLR, ILR, EIR, channel coding, interleaving, frequency hopping, cell planning and traffic analysis, concept of CDMA, convolutional coding, block interleaver, Walsh function, PN sequence generator, QPSK and OQPSK modulation, long code generator, pilot channel, synch channel, paging channel, access channel and traffic channel, ad-hoc mobile cellular communication, satellite based mobile cellular communication, IMT-2000, Mobile IP.

The course includes lab works based on theory taught.

Credits: 3+1=4; Prerequisite: ICE 314, ICE 320

ICE 414: Optical Communications

Characteristics of optical transmission media, optical fibers - preparation and transmission characteristics, loss and dispersion mechanisms, optical sources - principles of operation, modulation characteristics and driver circuits, photo detectors – principles of operation, circuits and performance, post detection amplifiers, fiber optic communication systems and link budget using direct detection, fiber optic connectors, couplers, multiplexers and splices, wavelength converters, routers, optical amplifiers, coherent and WDM systems.

Credits: 3; Prerequisite: ICE 314

ICE 415: Satellite Communications

Introduction to communication using satellites. Kepler's laws and orbital mechanics, satellite launching, propagation characteristics, frequency spectra and bands, satellites sub-systems, earth station technology, multiple access techniques, applications of GEO, MEO, LEO and V-SATS, mobile satellite communications.

Credits: 3; Prerequisite: ICE 412

ICE 416: Microprocessors & Interfacing

Microprocessor and its Architecture: Internal microprocessor architecture, real mode memory addressing, protected mode memory addressing, memory paging; Addressing Modes: Data addressing modes, program memory addressing modes, stack memory-addressing modes; Data Movement Instructions: MOV, PUSH/POP, load effective addresses, string data transfer, miscellaneous data transfer instructions, segment override prefix, assembler; Arithmetic, Logic and Program Control Instructions: Arithmetic operations, BCD and ASCII arithmetic, basic logic instructions, shift and rotate, string comparisons, the jump group, controlling the flow of assembly language program, procedures, interrupts, machine control instructions; Programming in Microprocessor: Modular programming, using keyboard and video display, data conversions, disk files; 8086/8088 Hardware Specifications: Pin outs and pin functions, clock generators, bus buffering and latching, bus timing, ready and the wait state, minimum mode and maximum mode; Peripheral Interfacing: Parallel versus serial transmission, synchronous and asynchronous serial data transmission, interfacing of hexadecimal keyboard and display unit, CRT terminal interfacing, printer interface, floppy disk interface, DMA controllers; 80186, 80286, 80386, 80486, Pentium and Pentium Pro Microprocessors: Introduction, memory management, special features.

The course includes lab works based on theory taught.

Credits: 3+1=4; Prerequisite: ICE 311, ICE 325

ICE 417: Artificial Intelligence & Expert Systems

Artificial Intelligence: Artificial Intelligence Techniques: Logic: propositional logic, first order logic, resolution principle. Problem Representation: state-space representation, problem reduction representation. Production System: PS structure, recognition-action cycle, inference directions, blackboard systems, PS implementation. Frame Representation: basic structure, inheritance of properties, slot extension, implementation. Relational Data Model: relational database model, entity and relationship, generalization and aggregation. Search: blind and non-blind searches, depth-first search, breadth-first search, heuristic search, best-first search, optimal search, A search. Implementation Complexity. Major AI programming Languages: LISP and PROLOG. Expert Systems: Basic Principles of Expert Systems. Natural Language Processing, Medical diagnostics, Financial design, and manufacturing planning.

Credits: 3; Prerequisite: ICE 208

ICE 418: Computer Communications & Networking

Introduction to computer and telecommunication networks, types of switching- circuit message and packet, transmission media characteristics, data communication principles – asynchronous and synchronous, layered architecture for computer networks, 7 layer OSI network model, standards for different layers, RS-232 C, X. 21. HDLC, X. 25 TCP/IP etc. network topologies, WAN, MAN, Intranet and LAN technology, IEEE 802 standards, ISDN & B-ISDN, frame relay and ATM network, traffic theory and network performance.

The course includes lab works based on theory taught.

Credits: 3+1=4; Prerequisite: ICE 314, ICE 327

ICE 419: Digital Image Processing

Digital image fundamentals: image digitization, sampling and quantization, image resolution, color perception & processing, image processing: pixel based transformation, geometric transformation, local processing (edge detection, subpixed location estimation) restoration (degradation, inverse fitting & Wiener filtering), binary image processing: thresholding, runlength encoding, distance transforms, medial axis transforms,

morphological operations, region segmentation & representation: split & merge algorithm, region growing, image filtering – histogram modification, linear and Gaussian filters, contours – digital curves, polyline splitting, Hop-Along algorithm, Conic & Splines Hough transform, Fourier description, textures: statistical syntactic and model based methods, image transforms – Fourier, Hadamard, discrete cosine, wavelets and other orthogonal transforms, compression image (predictive compression methods, vector quantization, hierarchical and progressive methods, JPEG and MPEG), case studies.
The course includes lab works based on theory taught.
Credits: 3; Prerequisite: ICE 411

ICE 421: Error Control Coding

Introduction to error control coding, elements of linear algebra and set theory, block coding and decoding – algebraic , cyclic and RS codes, performance of block codes, convolution coding and decoding – types of codes and their properties, majority logic, sequential and Viterbi decoding, interleaving, multi- stage coding techniques, punctured and Turbo codes, TCM, system application examples.
The course includes lab works based on theory taught.
Credits: 3; Prerequisite: ICE 314

ICE 423: Telecommunications Networks & Switching

Telephone Switching: Simple telephone connection, introduction to switching and signaling systems, single and multi- stage space switching analysis and design. Time/Digital switching systems, TS, ST, STS, TST systems, concept of packet switching and ATM, practical systems, circuit switching hierarchy and routing, signaling systems – SS7., telephone instruments, pulse and tone dialing, BORSCHT functions, modems, digital subscribers loops, telephone traffic theory; Telephone Networks: Motivation for ISDN, New services, network and protocol architecture, transmission channels, user-network interfaces, service characterization, internetworking, ISDN standards, expert systems in ISDN, B-ISDN, voice data integration.
Credits: 3; Prerequisite: ICE 314

ICE 424: VLSI Engineering

Introduction to the VLSI design flow, unit processes in VLSI (oxidation, diffusion, lithography, ion implantation, metallization, etc,), isolation schemes, bipolar and CMOS processing, analog ICs CMOS OPAMP static and dynamic CMOS/BICMOS and logic PLA circuits, SRAM, DRAM, introduction to mixed signal ICs, basic design methodologies: full custom and semi-custom design, ASIC field programmable devices, optimization at various levels, (algorithmic architecture, logic, circuit, device), simulation and testing, design rules, floor planning, placement, routing and layout, mask making procedure, parasities and other non-idealities, timing issues, clock skew etc, importance of device modeling.
The course includes lab works based on theory taught.
Credits: 3; Prerequisite: ICE 311

ICE 425: VLSI for Telecommunications

System integration in single chip/multichip module, system partitioning, high throughput and low latency design requirement for real-time communication, critical path analysis for high speed VLSI design, switched capacitor circuits, high speed A/D and D/A converters, concepts of mixed signal design, VLSI CAD tools, software and languages, low power circuits/architecture design methodologies, high speed switching circuits, high speed memory organization, high speed control & decision circuits, design of analog front ends, impedance matching with bonding pads, Si-Ge devices for RF circuits, interface for optical fibers, VLSI for generation and detection of PSK, FSK, QAM etc, subscriber line interface circuits, network switching circuits, VLSI systems for modem design, adaptive filters, equalizers, CVSD codecs, PLL, ISDN, UDLT, USART, Viterbi decoding, data encryption, DSPs, audio/video compression, video conferencing, Case studies for implementation of specific protocols currently in vogue.
The course includes lab works based on theory taught.
Credits: 3; Prerequisite: ICE 314, ICE 423, ICE 424

ICE 426: Neural Networks and Applications

Neurons and neural networks, basic models of artificial neural networks: simple layer perception, feed forward multilayer perceptron, Hopfield networks, competitive learning networks, applications of neural networks for matrix algebra problems, adaptive filtering and adaptive pattern recognition, dynamic system identification, dynamic system modeling using recurrent neural networks, approximation/optimization problems, VLSI implementation of neural networks.
Credits: 3; Prerequisite: ICE 411

ICE 427: Computer Graphics & Visualizations

Scientific Visualization: An Engineering Perspective; Overview of Computer Graphics for Visualization; Data Analysis for Visualization; Scalar Visualization Techniques; A Unified framework for flow Visualization; Continuous Volume Display; Animation and Examination of Behaviour Over Time; System Aspects of Visualization Application, Visualization Geometry and Algorithm, Surface Extraction, Solid Representation Techniques, CSG, B-Rep, Octree, Modeling Complexity, Application of Visualization to design and Analysis, Research Issues using Solid Modeling for Visualization.
The course includes lab works based on theory taught.
Credits: 3; Prerequisite: ICE 208

ICE 428: Robotic Technology

Robotic manipulation, direct kinematics – the arm equation; inverse kinematics – solving the arm equation, workspace analysis and trajectory planning, differential motion and static manipulator dynamics, robot control, task planning.
Credits: 3; Prerequisite: MAT 102

ICE 430: Communications and Network Security

Basic concepts of cryptography, mathematical overview of number theory, complexity and information theory, simple crypto systems - transpositions, substitution ciphers, homophonic ciphers, polyalphabetic ciphers, rotor machines, crypto analysis principles, private key systems, public key systems, signature systems, hash functions, cryptographic techniques, key sharing mechanisms, access control security policy, systems like Kerberos, fire walls.

Credits: 3; Prerequisite: ICE 418, ICE 423

ICE 431: Broadband Networks

Introduction to broadband communication services and quality requirements, broadband reference model, broadband traffic characterization, ATM – switching and multiplexing techniques, ATM protocol architecture, ATM adaptation layer, ATM signaling, ATM networks, ATM switching architectures, ATM congestion control techniques, FDDI, SDH, and SONET, optical networking – WDM networking and routing, photonic switching, optical access, edge and core networks, all optical networks, broadband access technologies – modems, XDSL, HFC, wireless, cable modems, emerging broadband communication and networking technologies. The course includes lab works based on theory taught.

Credits: 3; Prerequisite: ICE 418

ICE 432: Multimedia Communications Technology

Introduction to multimedia signals, characteristics of speech, audio, data, picture and video signals, source modeling and traffic features, speech and video coding techniques and standards, multimedia terminals, multimedia communication techniques – channels, bandwidth and networks, multimedia protocols and standards.

The course includes lab works based on theory taught.

Credits: 3; Prerequisite: ICE 314

ICE 435: Antenna Engineering

Concepts of lines of force, closed electric and magnetic lines, Maxwell's equations, transmission lines, short antennas and radiations, examples of short antennas, basic antenna parameters, point sources and array of point sources, self and mutual impedances, reciprocity theorem, loop and helical antennas, folded dipole and Yagi-uda array: Babinet's principle: slot, horn and complimentary antennas, radiation from apertures, ridge and corrugated horns, GTD, reflector antennas, baluns, antenna for mobile communication, antenna measurements.

The course includes lab works based on theory taught.

Credits: 3; Prerequisite: ICE 310

ITB 301: International Business

Analyses the major business management functions of international business environment, organizational policies, and strategies of multinational companies, industrial relations and control policies.

Credits: 3; Prerequisite: MGT 101, MKT 101, ECO 102

ITB 401: International Operations

Emphasis on the factors influencing marketing to and within foreign countries and the alternative methods of operations open to international firms.

Credits: 3; Prerequisite: ITB 301

ITB 428: International Economics

This course provides students with an understanding of international payments, balance of payments and foreign exchange markets, alternative international monetary arrangements and adjustments. This course will examine trade theory and policy and trade problems in multinational companies or in specific countries.

Credits: 3; Prerequisite: ECO 102,ITB 301

ITB 445: International Financial Institution

The course attempts to provide greater understanding of foreign exchange market and its intricacies with international trade. Major topics will include balance of payments, exchange rate regimes, Spot market, Forward market, BP curve, J-curve and the practices of IMF, World Bank, ADB, IDB, and other multilateral institutions.

Credits: 3; Prerequisite: ECO 102, ITB 301, FIN 201

ITB 450: International Business Negotiations

This course deals with the development of the conflict resolution, negotiating in the International context, mediation in International conflict, adjudication: International arbitral tribunals and courts, social-psychological dimensions of International conflict, Interactive conflict resolution, and contributions of training to International conflict resolution.

Credits: 3; Prerequisite: ITB 301, ECO 102

ITB 455: Country Risk Analysis

This course provides framework for identification and analysis of economic and political issues of a country to assess the risk factors of that particular country. Topics include demographic trends, social issues, cultural knowledge through case analysis that will help students to develop skills necessary to identify, assess and deal with issues of risks and uncertainty in various countries.

Credits: 3; Prerequisite: ECO 102, ITB 301

ITB 460: International Competitiveness

How a country competes in the world is the crucial factor in determining that country's ability to benefit from international trade in to-day's global economy. This course offers a complete and proper understanding of the meaning of International competitiveness, analyzes the implications it holds for an economy's progress, examines how it may be pursued and sustained at both the sectoral level (firms and industries) and the national level (strategic objectives). It would offer pertinent policy guidelines and prescriptions for how a nation can achieve and maintain international competitiveness in order to sustain the long-term prosperity of its industries, and hence the overall pace of economic growth.

Credits: 3; Prerequisite: ITB 301, ECO 102

ITB/FIN 465: International Financial Management

Analyzing the form and tools of international financial transactions at an advanced level. Topics included are managing exchange rate, capital raising and investment decisions through international financial markets and other related issues.

Credits: 3; Prerequisite: FIN 201, ITB 301

MAT 099: Remedial Mathematics

Unit System: Definition of unit and different types of unit system; Numbers: Concepts on digits, Real numbers, Natural numbers, Whole numbers, Even numbers, Odd numbers, Composite numbers, imaginary number, Pure imaginary numbers and complex numbers, Concept of factor and multiple; Set: Concept of different types of sets such as empty set, Universal set, Equal set, Subset, Proper and improper subsets, The union and intersection of sets, Formation of the Venn diagram of different types of sets; Linear equation and Inequalities: Basic concepts on linear equation and inequalities, Method of solution of linear equations and inequalities in one variable, Graph plotting of linear inequalities; Polynomials: Concept of polynomials, Monomials, Binomials and trinomials, Degree of a polynomial, Basic concept of function, Simplification and division of polynomials; Factorization: Factorization rules and middle term factor method; Absolute Value Equations and Inequalities: Solution of the absolute value equations, Solving and plotting absolute value inequalities; Exponent and Radicals: Theorems of exponents and radicals and their problems; Radical Equations: Solution of radical equations; Approximations: Concept on significant figures and decimal places; Areas and Volumes: Determination of the areas of triangle (Pythagoras theorem, concept of perimeter), Square, Rectangle, Parallelogram, and Trapezium, Determination of the volumes of box, cube and sphere; Ration and Proportion: Basic concept on ratio and proportion, Solving problems using ratios, proportions and proportional divisions; Percentage and Percentage Gain and Loss: Problems of finding percentage and percentage gain and loss; Coordinate System and Graph Plotting: Concept on two-dimensional coordinate system (Cartesian System), Graphs of straight line and parabola; Simultaneous Equations: Solution of the simultaneous equations (Algebraic and graphical solutions); Central Tendency: Concept on arithmetic mean, median and mode, Determination of arithmetic mean, median, and mode for ungrouped data.

Credits: 0 Prerequisite: None

MAT 101: Calculus and Vector Analysis

Differential Calculus: Basic concept on limits and continuity, Techniques of differentiation, Indeterminate forms, Concavity and convexity of a curve, Points of inflexion, Asymptotes and curvature, Functions of two or more variables, Partial derivatives, Euler's theorem on homogenious functions, Taylor's expansion, Maxima and minima of functions, Jacobian; Integral Calculus: Integration the inverse of differentiation, simple application of integral calculus – rectilinear motion, Average value, Area between two curves, Double and triple integrals, Volume of a solid body; Fouries Series: Basic concept of periodic function, unit impulse function, Trigonometric series, Fourier sine, cosine and exponential series; Vector Analysis: Vectors and scalars, Algebra of vectors, Vector differentiation and vector integration, Gradient, Divergence and curl, Cartesian, Spherical, Polar and Cylindrical coordinate systems, Green's theorem, Divergence theorem and Stoke's theorem.

Credits: 3; Prerequisite: None

MAT 102: Differential Equations and Special Functions

Differential Equations: Equations of the first order and first degree, Homogenious differential equations, Equations reducible to linear equations and exact differential equations, Linear differential equations of second and higher orders, Partial differential equations, Solutions of simple partial differential equations; Special Functions: Beta function and gamma function, Dirac delta function, Legendre differential equation and Legendre polynomials, Recurrenec relations for Legendre polynomials, Spherical harmonics, Bessel differential equation, Bessel functions, Recurrence relations for Bessel functions, Modified Bessel functions, Hermite differential equations, Hermite ploynomials, Hyper-geometric function.

Credits: 3; Prerequisite: MAT 101

MAT 110: Mathematics For Business and Economics I

Topics include: Set, liner equations and inequalities in one variable, quadratic equations, Cartesian coordinate system and straight lines, function, linear and quadratic functions, exponential and logarithmic functions, system of liner equations, matrices, permutation and combination, binomial theorem, arithmetic and geometric progression.

Credits: 3; Prerequisite: MAT 099

MAT 201: Linear Algebra

Systems of Linear equations and Matrices: Introduction to systems of Linear Equations, Gaussian Elimination, Matrices and Matrix operations. Inverses; Rules of Matrix Arithmetic. Elementary Matrices and a method for finding inverse of a matrix. Further results on systems of equations and invertibility. Diagonal, Triangular, and Symmetric Matrices. Determinants: Basic concept on determinant, Evaluating determinants by row reduction, Properties of the determinant function. Cofactor expansion; Cramer's Rule. General vector space: Real vector space, Subspace. Linear independence, Basis and dimension. Row Space, Column Space, and Nullspace. Rank and Nullity. Eigenvalues and eigenfunctions: Concepts on Eigenvalues and eigenfunctions, Diagonalization, Orthogonal Diagonalization. Linear Transformation: General Linear Transformations, Kernel and Range, Inverse Linear Transformations, Matrices of general Linear Transformations. LU-Decompositions.
Credits: 3; Prerequisite: MAT 102

MAT 301: Complex Variables and Mathematical Transforms

Complex Variables: Complex number system, General functions of a complex variable. Limits and continuity of a function of complex variable. Complex differentiation and the Cuchy-Riemann equations. Infinite series. Convergence and uniform convergence. Line integral of a complex function. Cauchy integral formula. Liouville's theorem. Taylor's and Laurent's theorem. Singular points. Residue, Cauchy's residue theorem; Laplace Transform: Definition of Laplace Transform, Laplace Transform of different functions, Inverse Laplace Transform, convolution, evaluation of improper integrals by Laplace Transforms. Solution of differential equation by Laplace Transforms. Fourier Series: Review of Fourier Series, Convergence of Fourier Series, Fourier Integral.
Credits: 3; Prerequisite: MAT 201

MAT 311: Mathematics for Business and Economics II

Topics include: Economic and business models, functions, limits and continuity, concept of derivative, rules of differentiation and integration, and their use. Constrained optimization with lagrangian multiplier, partial derivatives. Theory is pesented informally and techniques are related to polynomials, logarithmic and exponential functions.
Credits: 3; Prerequisite: MAT 110, ECO 102

MAT 407: Advanced Calculus

Vector differential equations, constant coefficient equations, first-order systems, linear systems.
Credits: 3; Prerequisite: MAT 311

MAT 470: Real Analysis

Real and complex number system, basic topology, numerical sequence and series, continuity, differentiation, Rieman-Stieltjes integral, sequence and series of functions.
Credits: 3; Prerequisite: MAT 301

MGT 101: Principles of Management

This course introduces the students with basic management concepts, theories and models in effective management and decision making process. It provides an overall conceptual framework that can be used to understand how a manger can influence in the field of management. Particularly it will review and discuss for better understanding the basics of planning, organizing, controlling, interpersonal relations and leadership/management role in the managerial environment of today.
Credits: 3; Prerequisite: BUS 101,ENG 101

MGT 251: Organizational Behavior

Understanding the behavior of employees in organizations, particular attention to motivation to the individuals to join and perform in organizations and to employee satisfaction with element strategies to modify employee motivation and satisfaction.
Credits: 3; Prerequisite: MGT 101

MGT 337: Production Operations Management

Topics include: Introduction to production management, consideration of major problems of the production area, and the use of quantitative methods for solving them .
Credits: 3; Prerequisite: MAT 110, STA 101

MGT 402: Management Science

Survey of the current literature in Management Science examines principles and practices of scientific management. Selected topics in this course include: MBO, quantitative methods, markov decision problems, simulation and queuing theory.
Credits: 3; Prerequisite: STA 327

MGT 405: Organizational Development and Change

Provides an understanding of basics of organizational development, organizational renewal and change, intervention process. The objective of this course is to provide students with an integrated and comprehensive view of the field of organizational development.
Credits: 3; Prerequisite: MGT 251

MGT 409: Human Resources Management

This course covers factors in organizational performances, motivation and performance, HR planning; job design and staffing development and appraisal, compensation and reward, employee projection and representation and the future of HRM.
Credits: 3; Prerequisite: MGT 101

MGT 410: International Labor Management

This couse provides an overview of the history and development of labor relations, the structure of union organizations, and process of negotiations and contract administration . Topics include the study of labor management in development market economics, international bargaining, ethics and employee relations. This course is a balanced approach from international or management viewpoint and an analysis from a behavioral, institutional and economic perspective.
Credits: 3; Prerequisite: BUS 361

MGT 421: Entrepreneurship Development

This course starts with the evaluation of the available business opportunities. Then it discusses the marketing strategies, financing, controlling process the leagl responsibilities. It concludes with some tips for the future applications and shows the students the need for a business plan.
Credits: 3; Prerequisite: MGT 101

MGT 425: Total Quality Management

Examines major issues of TQM principles and theories. Topics include Demings, Jurans, Crrosby's TQM principles, JIT, HRM, Leadership theories, Quality and operaional research.
Credits: 3; Prerequisite: MGT 101

MGT 437: Small Business Management

Managing small firms is a multidisciplinary activity. Planning activity binds all other activities together. Besides planning the course covers topics, such as: setting up, business basics, finance, control and the growing business.
Credits: 3; Prerequisite: MGT 101

MGT 448: Managing Globalization

This course contains topics on organizational strategy : for global competitive advantage ; management dynamics : structuring, staffing, & sharing values ; and cases regarding global management. This course also covers cultural and behavioral aspects of globalization, functional aspects of globalization and socio-ethical issues relating global management.
Credits: 3; Prerequisite: ITB 301, MGT 101

MGT 465: Leadership Management

This program responds to the leadership development needs of government and non-government organizations. This program provides a means by which students may discover and refine abilities fundamental to effective leadership.
Credits: 3; Prerequisite: MGT 251

MGT 480: Strategic Management

Analysis of policy formulation and implementation from a company wide stand point. Emphasis on integration of knowledge and approaches across functional areas, both endogenous factors, which affect company policy and the role of the firm in the society.
Credits: 3; Prerequisite: All required courses/99 Credits

MIS 101: Introduction to Management Information System

Introduction to the components of the management information system and their integration for managerial control and decision support. Major functional applications and impacts of information technology on individual and society.
Credits: 3; Prerequisite: CSE 101

MIS 305: Enterprise Information System

The aim of this course is to focus on the different perspectives of Information Technology Management and its changes in the 21st century. It will prepare the students to face the MIS challenges of the new millennium. This course includes different technological matters such as e-business models, value creation and group focusing by using technology. It also includes extended enterprise concept in creating value from different computer based decision making approaches and virtual business concept. Different communication challenges from network perspective are also included. Electronic commerce imperative, MIS dilemmas for managers, unintended consequences of information technology, privacy in the age of the Internet, the global network organization of the future, its transformation, and business education will also be covered.
Credits: 3; Prerequisite: MIS 101

MIS 401: Structural Programming

General computer programming techniques and methodologies applicable to any modern programming language. Modular design, evaluation of expression, basic data structure, recursion, pointers and good documentation practice
Credits: 3+1; Prerequisite: CSE 101

MIS 402: System Analysis and Design

Essential steps in developing a management information system, Including P-3 preliminary planning, designing, feasibility analysis, implementation schedule, and post implementation review of the systems which familiarizes students with methodology and techniques.
Credits: 3; Prerequisite: MIS 101,MIS 305

MIS 404: Networking and Operating System

The logical and physical design and implementation of computer network. The framework of layered architecture, different protocols, cable types and connectors, network naming and security, wide area networks, network trouble shooting, file systems of Microsoft NT, installing, fault tolerance, WINNT resources, remote access, performance monitor, file systems of UNIX, basic commands, editors, and shell scripts.
Credits: 3; Prerequisite: MIS 101, MIS 305

MIS 406: Relation Database Management System

The logical and physical design of database using computerized tools. Topic include - query optimization, DDL, DML, DCL, keys, joins, triggers, standard SQL functions e.g. count, nvl, sum, order and group by, snap shots, clusters, table space, etc. A great deal of emphasis will be given to query writing using the PL/SQL ; forms and report will be created by using different front end tools.
Credits: 3; Prerequisite: CSE 301, MIS 101, MIS 305

MIS 407: System Integration & Security and Internet

Business and system specification, existing hardware and software platform, file system of different operating systems, integration features of different systems including hardware and software, security features of different hardware and software, history and current management of internet, engines, internet services, electronic business and business promotion, internet software development and security.
Credits: 3; Prerequisite: MIS 101, MIS 305

MIS 408: Internetworking with TCP/IP and Implementing Exchange Server

Introduction to TCP/IP, identifying machine with IP routing, IP address resolution, host name resolution, Net BIOS name resolution, DHCP, WING, internet working, browing, connetivity in heterogeneous environments, SNMP services, fine tuning and optimization, trouble shooting, and administration of exchange server.
Credits: 3; Prerequisite: MIS 404

MIS 409: Client/Server Administration

Domain model in the enterprise, server managing, uses (local and global) management, resource management, server and client, internet services, internet work routing, system performance, network monitoring, and server and client trouble shooting.
Credits: 3; Prerequisite: MIS 404

MIS 415: Decision Support System

This course focuses on the fundamentals of decision support system, its tools and implications in present decision making process.
Credits: 3; Prerequisite: MIS 406

MIS 419: E-Commerce and Web Programming

This course focuses on recognizing and explaining electronic business process and identifying and recommending Internet and E-Commerce. Topics include implementation of and conducting E-Business and managing Web: the global and local market, business to business, Web application, corporate Web server management, legal considerations, Electronic Payment Systems (EPS), role of the bank in E-commerce, business model for E-commerce. It covers Web technology comprehensively.
Credits: 3; Prerequisite: MIS 406

MKT 101: Principles of Marketing

Principle of marketing course is designed to give the students an interesting and decision oriented approach to the study of basic marketing concepts and practice. This course provides an integration of marketing activities of the firm into a system, which includes basically product, price, promotion and place.
Credits: 3; Prerequisite: BUS 101

MKT 201: Marketing Management

Management of the firm's marketing function within a dynamic operating environment. Includes study of such function as product development, promotion, channel, selection, logistics and market research.
Credits: 3; Prerequisite: MKT 101

MKT 401: Sales Management

Analysis of the management of the sales effort within the marketing system. Philosophies, concepts, and judgement criteria of the sales function in relationship to the total marketing program.
Credits: 3; Prerequisite: MKT 201

MKT 405: Promotion Management

The role of promotional activities in the firms marketing function. Topics included advertising, personal selling, sales promotion and publicity. The relationship of consumer behavior to the area of promotion.
Credits: 3; Prerequisite: MKT 201

MKT 408: International Marketing

Analysis of international operations. Emphasis on the factors influencing marketing to and within foreign countries and the alternative methods of operations open to international firms.
Credits: 3; Prerequisite: ITB 301, MKT 201

MKT 410: Consumer Behavior

Examines underlying psychological, sociological, and economic factors, which influence consumer behavior. Studies and impact of marketing activities on society, consumerism, and legislation affecting the market place.
Credits: 3; Prerequisite: MKT 201

MKT 412: Service Marketing

Characteristics of service industries and organizations, pre-sales and post-sales activities and marketing people in service marketing. The service marketing mix major store and non-store retailing. Managing services quality, productivity, relationships and service marketing etc.
Credits: 3; Prerequisite: MKT 201

MKT 414: Marketing Research

The basic procedures and theories appropriate to solving various types of marketing problems in the context of business organization and decision models.
Credits: 3; Prerequisite: STA 101, MKT 201

MKT 416: Brand Management

The focus of this course is on formulating and implementing complete marketing programs for successful brand management. The main objective is to provide an in-depth understanding of the role of brands in marketing consumer and industrial goods/services. The course also deals with the key responsibilities of a brand manager and provides the students also with some of the quantitative tools that are helpful to brand managers in analyzing customers and competitors and guiding them in their strategic and tactical decisions. Definition of brand, the nature and evolution of branding, brand image, positioning and repositioning brands, building and measuring brand equity, pricing and promoting brands, brand strategy and brand plans, global branding, protecting the brand.
Credits: 3; Prerequisite: MKT201

MKT 418: Physical Distribution

Integration of physical distribution activities of the firm into a system. Transportation and location as elements of the system. Inventories and service as constrains upon the system. Planning, operation and management of the system.
Credits: 3; Prerequisite: MKT 201

MKT 430: Strategic Marketing

The course discusses marketing strategy, defining and analyzing markets, marketing segmentation, analyzing competition, market targeting and positioning strategies, product portfolio strategy, implementation, and other relevant topics.
Credits: 3; Prerequisite: STA 101, MKT 201

PHRM 099 Remedial Biology

This course is designed for those who did not have Biology (or have weaker Biology background) in their Higher Secondary or equivalent education. This course includes: structure, organization of functions specific cellular organelles; eukaryotic and prokaryotic cell division; fundamentals of nucleic acids (DNA, RNA), proteins, carbohydrates and lipids; organization, classification and functions of different tissue types and physiological systems. Origin of life and Mendel's laws of inheritance will also be introduced in this course.
Credits: 2, Prerequisite: None

PHRM 101: Physical Pharmacy I

The objective is to introduce to the students the basic aspects of chemistry and Pharmacy' The courses are included to study the theoretical and practical Organic chemistry under the broad outlines what are atom, atomic structure, modern concept of electronic configuration , properties of solution, chemical kinetics, chemical thermodynamics , stereochemistry, ionic equilibrium, electrochemistry and adsorption and interfacial phenomenon. The course will focus on electronic configuration of carbon, valence and the physical properties and their reaction mechanism.
Credits: 2+1, Prerequisite PHY 103

PHRM 102: Cell and Developmental Biology

This course deals with the molecular and cellular processes that occur for the development of human. The course will give an overview of basic structure and function of cells, steps and historical perspective of human development, organogenesis, Chromosomal abnormalities and how an adult transmits the instruction for making an offspring from one to the next.
Credits: 2 + 0, Prerequisite: None

PHRM 103: Organic Pharmacy

The course introduces fundamental aspects of organic chemistry carbon compounds, atom, electronic structure, orbital, bond formation, organic reactions, structure, preparation and properties of aliphatic and aromatic organic compounds and their pharmaceutical and biological uses. The course also undertakes practical chemistry of organic compounds and their identification.
Credits: 2+1, Prerequisite: None

PHRM 201: Human Physiology

The purpose of the course is to give a basic understanding of the functions of human body and body system. The functions of major body systems and their role in the maintenance of a constant internal environment, homeostatic effector organ systems (cardiovascular, respiratory, digestive & metabolic, renal) and of the immune system are studied. A laboratory work related to physiology of the human body is included with this course where histology of Muscles, liver, spleen, lungs, endocrine gland will be examined.
Credits: 2 + 1, Prerequisite: PHRM 102

PHRM 202: Basic Microbiology

This course is designed to introduce students with the historical perspective in terms of major innovations in the field of Microbiology. Basic tool of Microbiology, i.e., Microscopes of various types their principles and uses will be covered in detail. Simultaneously, Morphology, classification, growth of bacteria, virus, fungi and yeast will be given importance.

Credits: 2, Prerequisite: None

PHRM 203: Pharmaceutical Analysis

The aim of this course is to familiarize students with various aspects of pharmaceutical calculations, different types of titration, percentages of dose determination, , proportions of dilution ,determination of concentration. . Also the students are introduced to learn about different techniques of chromatography for separation and identification and dose assessments. The various separation techniques include Column chromatography, paper, thin layer and Gas chromatography, HPLC, Gel filtration and Electrophoresis. Besides, the practical laboratory class includes Quality control and assay of drugs of different dose tablets, vitamins, syrup and others.

Credits: 2+1, Prerequisite MAT 104

PHRM 204: Physical Pharmacy II

The objective of this course is to provide knowledge to the students about the principles of physico-chemical parameters involved in drug formulation process and the factors involved such as electrochemical forces (Vander walls), dipole, chemical bonds, melting point, crystal formation, density, viscosity, volatility, solute solvent interaction, solubility etc. Specifically to provide knowledge on stability of drugs formulation solutions. Mechanism of degradation by varied process, rate of degradation, formulation approaches dealing with stabilization. Factors responsible for colloidal dispersion and stabilization study which will provide information on general characteristics, diffusion and theological behavior, understanding o f colloidal properties and their application in medicine to stabilize formulation. In addition it includes practical laboratory training of the important physico-chemical parameters for evaluation by use of the techniques.

Credits: 2+1, Prerequisite PHRM 101

PHRM 205: Biomolecular Pharmacy

In this course major biomolecules i.e., proteins (including amino acids), nucleic acids, carbohydrates, lipids will be discussed in detail in terms of chemistry, classification, physiological roles. Examples will be given with specific reference to the pharmaceutical sciences.

Credits: 2, Prerequisite: None

PHRM 206: Biochemistry

The course offers advance topic on biochemical reactions, energy changes, electron transport and oxidative phosphorylation ATP generation. Enzyme, general characteristics, active sites, enzyme kinetics, enzyme mechanism of action, competitive and non-competitive inhibition, vitamins, functions, classification and structures, co-enzymes and co-factors. This will provide insight to more advance level study of biochemical study.

Credits: 2, Prerequisite: PHRM 101, PHRM 103 PHRM 205

PHRM 207: Pharmacognosy

Theoretical and applied course designed to acquaint the student with the occurrence, isolation, characterization, identification of biologically active natural products. Pharmaceutical use of different phytoconstituents with existing plant classification systems will be discussed in this course. Use of microscopic methods in the identification of different parts of plants, plant constituents and herbal products, procedures useful for the isolation and characterization of natural drugs has been included in related laboratory experiments.

Credits: 2 + 1, Prerequisite: None

PHRM 208: Metabolism and Endocrinology

This course will deal with the transport, synthesis, metabolism (wherever applicable) of major biomolecules e.g., carbohydrates, lipids, proteins and nucleic acids including their building blocks (monomers). Mechanism of action of hormones; physiological role of different hormones; regulation of hormone secretion; different hormonal disorders and their control will also be discussed.

Credits: 3, Prerequisite: PHRM 206

PHRM 209: Statistics for Pharmaceutical Sciences

The aim of the course is to equip students with the basic statistical knowledge that can be applied to problems typical of pharmaceutical manufacturing, quality assurance and research. The course will be hands on with many examples from actual pharmaceutical problems. It will provide an introduction to experimental design and statistical analysis including selection and application of proper tests of statistical significance, hypothesis testing, modeling and the interpretation of results by computer programs.

Credits: 2 + 0, Prerequisite: MAT 104

PHRM 210: Agro-pharmaceuticals

This course will cover the major diseases of the agricultural important plants of Bangladesh in terms of etiology; pathogenesis; prevention, treatment and control of the diseases. This course will also cover the aspects of molecular biological measures to increase the production of the agricultural important plants of Bangladesh.

Credits: 2, Prerequisite: None

PHRM 211: Industrial Pharmacy

This course is intended to introduce to the students the major three aspects of industrial manufacturing of drugs, product development, management and communication skill. This will include practical training in industry. It is desired that student should be familiar with the manufacturing equipments and process, quality control, in-process control and finished products. Understand Good Manufacturing practice (GMP), QA and QC, storage of raw materials, entry and distribution, able to follow Standard operating process (SOP), and the flow of manufacturing process.

This course introduces further procedure of different stages of product development, cleaning of equipment, manufacturing process, analytical method validation. The students are expected to understand and use in professional position. The management aspect of skill development is another objective of this course. Pharmacist is expected to verbally communicate with other team member, assert his role, and develop leadership quality through the learning process.
Credits: 2, Prerequisite: None

PHRM 212: Pharmacology I

The course deals with basic pharmacologic principles applicable to all drugs. It describes appropriate strategies for monitoring the expected effects and potential adverse effects of medications prescribed Principles of drug action; receptor classification and quantization; dose-response relationships; cellular mechanisms of drug action; fundamental concepts of drug-receptor interactions; voltage-gated and ligand-gated ion channels; drug actions mediated by transduction and non-transduction enzymes; time course of drug action; absorption, distribution, biotransformation and elimination of drugs; pharmacokinetics. The actions of different drugs and biologically active compounds are examined in the laboratory classes.
Credits: 2 + 1, Prerequisite: PHRM 201, PHRM 207

PHRM 213: Cosmetology

The course will provide basic knowledge of skin care, dental care, hair care products and other cosmetics. The course covers of the terminology related to cosmetics, their composition, use, effects and side effects, and also demonstrate the proper application related to skin care products and cosmetics.
Credits: 2 + 0, Prerequisite: None

PHRM 301: Medicinal Chemistry I

This course has been developed to give students knowledge of designing and synthesizing medicine for the targeting and treatment of ailment. The course encompasses the chemistry of medicine including structure activity relationship, biochemical and physiochemical properties of different therapeutic classes of medicines. This course also discusses the inter-relationship between chemistry and biology and an understanding of how the convergence of this knowledge is driving many of the exciting developments in new treatments of human disease. The course includes laboratory classes of synthesis and identification of medicinal compounds.
Credits: 2+ 1, Prerequisite: PHRM 207

PHRM 302: Human Morphology

The course will consider detailed aspects of human skeletal biology, the anatomy of structures that impinge directly and indirectly on the human skeleton, and regional human descriptive and functional anatomy as relevant to the interpretation of skeletal remains.
Credits: 2 + 0, Prerequisite: None

PHRM 303: Medicinal Chemistry II

The course aims to provide an advance understanding and appreciation of medicinal and chemical sciences by detailed studies of modules selected from the fields of biology, biomedical sciences and chemistry. The emphasis is firstly on synthesis, structure and analysis of organic molecules and biomolecules and secondly on their participation in the metabolism of and interaction with living organisms. An extensive laboratory experiments are included to this course.
Credits: 2 + 1, Prerequisite: PHRM 207

PHRM 304: Immunology

This course offers a general overview of the Acquired and Innate immunity cells (T-cells, B-cells, phagocytes, macrophages) and organs of the immune system their organization and functions. This course also introduces chemical and biological features/significance of antigen, antibody. Different cytokines; MHC molecules will also be discussed in detail. In laboratory practices students will be introduced different methods/techniques of immunology e.g., ELISA, FACS, Immunohistochemical staining, western blotting etc.
Credits: 2+1, Prerequisite: PHRM 201, PHRM 202, PHRM 205

PHRM 305: Pharmaceutical Microbiology

This course offers both the theory and practical of cultivation (culture), preservation, identification (biochemical/molecular) of certain pathogenic bacteria, virus and fungi. Students will learn different methods of sterilization (chemical/physical), tests for drug (antimicrobial) sensitivity and resistance.
Credits: 2+1, Prerequisite PHRM 202

PHRM 306: Pharmacology II

Drugs, which are exceptions to, or variations from, prototypes, are emphasized. The course emphasizes drug therapeutics, side effects, toxicity, precautions, contraindications and interactions both in vivo and in vitro. How knowledge of basic pharmacology can be used to assess drug manufacturers' claims is included in the laboratory course.
Credits: 2 + 1, Prerequisite: PHRM 212

PHRM 307: Therapeutics

The course is directed to understand the treatment of some specific diseases such as ophthalmic, cardiovascular, hematological disorder, renal disorder, neurological, endocrine, , diabetes, pain, GI, psychiatric, rheumatology, pediatrics, urology.

Credits: 3, Prerequisite: PHRM 302, PHRM 306

PHRM 308: Pharmaceutics I

The course will provide the student with a basic knowledge of pharmaceutical dosage forms and drug delivery systems. The course will cover solutions, parenteral delivery systems, disperse systems, solid dosage forms, dosage forms applied to the skin, and radiopharmaceuticals. Addresses the rational design and formulation of dosage forms, and the processes and equipment in their large-scale manufacture. Consideration is on to how the interplay of formulation and process variables affects both the manufacturability of the dosage form and its performance as a drug delivery system.

Credits: 3 + 0, Prerequisite: PHRM 307

PHRM 309: Diagnostic Imaging

The overall objective of this course is to introduce the concept of diagnostic imaging and clinical applications as relevant to the practice of pharmacy. Basic principles applicable to instrumentation, the design of diagnostic imaging drugs, and clinical concepts are emphasized. In addition to specific diagnostic drugs and therapeutics adjuncts used with various imaging modalities, the advantages and limitation of each modality will also be discussed.

Credits: 2, Prerequisite: PHY 102, PHRM 203

PHRM 310: Applied Nuclear Pharmacy

Chemistry of radioactive isotopes in particular of those used in pharmaceutical industries and laboratory research; different electromagnetic radiations, their effect on biological systems, uses, safety precautions during handling radioactive chemicals. This course will also offer the demonstration of radioactive measurements by different methods.

Credits: 2, Prerequisite: PHY 102, PHRM 101

PHRM 311: Pharmacodynamics and Pharmacokinetics

The course covers mechanisms by which pharmacological agents interact with the living organism to provide the student with a rational basis for investigations in biomedical research. Pharmacodynamics is the study of the biochemical and physiological effect of drugs on biological systems. Topics include the pharmacodynamics of drugs influencing the human body. The pharmacokinetic description of the rate and extent of drug absorption, distribution, elimination and action are clearly discussed in this course. This course is accomplished with related laboratory classes related to pharmacodynamics and pharmacokinetics.

Credits: 2 + 1, Prerequisite: PHRM 308

PHRM 312: Veterinary Pharmacology

This course offers description of prevalent diseases of bovine, equine, porcine, ovine and some other pets like dogs and cats. Treatment of these diseases mode of action of the drugs will also be focused.

Credits: 2, Prerequisite: PHRM 306

PHRM 313: Antimicrobial and Anticancer Drugs

With the relevant theoretical background on mechanism of action, side effects, pharmacokinetic concerns of major antimicrobial (bacterial, viral) agents, resistance to antimicrobial agents this course will also offer detail of anti-cancer therapy. Options for case studies will let the students understand the uses of different anti-microbial/anticancer agents by the respective patients, experiences of side effects by the patients, efficiency of the drugs etc.

Credits: 2, Prerequisite: PHRM 305, PHRM 306

PHRM 314: Spectroscopy, and X-ray Crystallography

The objective of this course is to orient students with various instruments and make understand the principles of operation and uses of these techniques. The instrument include: UV and visible spectroscopy, infrared spectroscopy, mass spectrometry, nuclear magnetic resonance spectroscopy and x-ray crystallography.

Credits: 2, Prerequisite: PHRM 203

PHRM 315: Hospital Pharmacy (Practical Work and Journal Club)

The course objectives are to provide students with a state-of-the-art knowledge of hospital pharmacy practice, to enhance problem-solving related to hospital and other institutions. It gives an opportunity to explore the unique role and practice of pharmacists in an institutional pharmacy with emphasis on daily pharmacy operations. Topics include hospital pharmacy organization, work flow and personnel, medical and pharmaceutical terminology, safety techniques, data entry, packaging and labeling operations, extemporaneous compounding, inpatient drug distribution systems, unit dose cart fills, quality assurance, drug storage, and inventory control. This course is designed to give the student practical experience on, hospital policy and procedure, experience with therapeutic problems and outcomes, patient monitoring, medication packaging, parenteral preparations using aseptic technique and communication with pharmacists, health care providers and patients with an emphasis on professionalism.

Credits: 2 (8 Weeks of Clinical Practice), Prerequisite: PHRM 304, 306, 307

PHRM 401: Molecular Biology

This course offers detail of structural components and their functions of eukaryotic chromosomes, replication, transcription, translation, Transformation, transduction, conjugation. Protein and nucleic acid sequencing along with different aspects of cloning, nucleic acid amplifications will be covered.

Credits: 2+1, Prerequisite: PHRM 205

PHRM 402: Toxicology of Drug and Related Products

This course offers toxicity and/or poisoning of heavy metals, organic compounds, carcinogens, environmental toxins etc. Mechanism of cytotoxicity of these toxins/poisons, toxicokinetics, responses of different organs to these toxins/poisons will be covered with toxicity tests (laboratory) for different types of toxins.

Credits: 2+1, Prerequisite: PHRM 303

PHRM 403: Community Pharmacy (Practical Work and Journal Club)

Designed to give the student practical experience in a community setting with emphasis on prescription dispensing e.g. prescription filling, prescription interpretation, legal requirements, etc. and drug products, computer programs, managerial functions, OTC knowledge, and communication with pharmacists, healthcare providers and patients; professionalism is stressed.

Credits: 2 (8 weeks of community Pharmacy practice), Prerequisite: PHRM 315

PHRM 404: Pharmaceutical Management and Marketing

This course has been designed to give an overview on a method of critical thinking about marketing and decision making of medicine, critical analysis of the pharmaceutical product marketing process and the firms' environment. The course also discusses the role and purpose of marketing activities within an Pharmaceutical Organization, the social and environmental impact of marketing activities, the ethical dilemmas faced by marketing decision makers in medicomarketing activities.

Credits: 2 + 0, Prerequisite: PHRM 403

PHRM 405: Pharmacy and Neoplastic Disease

With the relevant theoretical background on anticancer drug this course will also give an overview on cancer, different type of cancer treatment such as chemotherapy, bone marrow transplantation etc and management of cancer. Oncological complications and systematic toxicity/ infectious complications due to different cancer treatment will also be offered by this course.

Credits: 3, Prerequisite: PHRM 201, PHRM 401

PHRM 406: Pharmacy Practice

The course is introduced to understand the philosophy of pharmacy practices in general and specifically the health care, role in the health care, pharmacy services, pharmacist professional issues: documentation, prescriptive authority, drug information and literature evaluation – drug information filling system. The opportunities of pharmacist in community and institution, industry, Government, association and more involvements in emergency medical treatment, pharmacy administration: operation, drug procurement, wholesale services, purchase order, invoice and inventory control.

Credits: 3, Prerequisite: PHRM 306, PHRM 316, PHRM 403

PHRM 407: Pharmaceutics II

The study and application of physicochemical principles to the design, formulation, and effective use of dosage forms to assure product performance and achieve the desired therapeutic outcomes in the body. Emphasis has been placed on rationale for design, intended performance characteristics, and proper use of dosage forms. This course emphasizes ability development; content progresses, beginning with traditional drug design continuing with principles of pharmaceutics, biopharmaceutics, pharmacokinetics and drug metabolism.

Credits: 3 + 0, Prerequisite: PHRM 308

PHRM 408: Alternative Medicine

Basic philosophy of causes, prevention, control and cure of different diseases, treatment strategies, origin of medication, current trends of research and development, major fields of successful treatment of the following approaches Homeopathy; Ayurvedic; Acupuncture; Aromapathy; Yoga and other holistic approaches will be offered.

Credits: 3, Prerequisite: PHRM 201

PHRM 409: Drug Design and Development

The objective of the course is to understand the principles of drug design and development. The sourcing from natural resources extraction and random screening are important step. In development Molecular modification and stereo-chemical aspects are essential because of the specificity of drug action. Molecular modification involves chemistry of association, changes in dimension, flexibility, ring closure and opening, removal or addition of bulky group and introduction of double bonds. In stereo-chemical aspects it deals with optical isomer, disstereomers, conformational isomers and geometric isomers; Finally the study of computer aided drug design, modeling, molecular graphics and clinical trial research of new drugs for investigation, application and analytical methodology development for quality assessment are introduced. The students are expected to orient basic drug sourcing to end application of quality drug.

Credits: 2, Prerequisite: PHRM 301, PHRM 303

PHRM 410: Pharmaceutical Biotechnology

Modern biotechnological approaches like recombinant DNA technology, gene therapy, antisense oligonucleotide therapy, vaccine technology, gene cloning will be introduced in terms of their innovations, uses/applications for pharmaceutical purposes.

Credits: 2, Prerequisite: PHRM 305, PHRM 401

PHRM 411: Pharmaceutical Research

The course is introduced as a means of providing an opportunity for exposure to investigational research. The course is designed principally helping students in practicing the research pattern to help them pursue graduate studies. The student undertakes a research project and writes up a report in a research paper format; It is the student's responsibility to find a faculty member to direct the research. A dissertation or report will be submitted by the individual student or group of students before the end of the fourth year second semester.

Credits: 4, Prerequisite: All courses having Laboratory

PHRM 412: Pharmacy Quality Assurance & Improvement System

The course is designed to train students in the principles of Quality control, quality assurance of manufacturing / formulation of drugs under the guidance of Good Manufacturing practice. The documentation of entire formulation process, quality control of packaging components, raw materials quality, validation of both analytical methodology and production process of finished products. The objective is to establish quality standard compliance and upgrading in all affairs during manufacturing to marketing.

Credits: 3, Prerequisites: None

PHRM 413: Biopharmaceutics

This course explores how the fate of drugs in the body is influenced by physiological and biochemical processes. It will give an overview of compartmental and non-compartmental description of the time course of drug action in human body. The fundamental principles and quantitative relationships used to evaluate biological data; approaches in optimizing pharmaceutical preparations, in designing dosage and dosage regimens, and in evaluation of the biological as well as therapeutic responses. The resulting knowledge forms the basis for selection a particular drug preparation, route of administration, evaluation of bioavailability of drug products manufactured by different suppliers, and identifying patient's factors which require a modification of the average drug dose and dosage regimen.

Credits: 3 + 0, Prerequisite: PHRM 308, PHRM 311

PHRM 414: Pharmaceutical Production system

The course is introduced to educate the students regarding the practical set up and problems associated with the production floor. The types of machinery used for the various production process starting from raw materials, packaging materials, water, operators handling of materials inventory to finished product will be covered inclusive safety, health and environment of the plant.

Credits: 3, Prerequisites: PHRM 209, PHRM 211, PHRM 315

PHRM 415: Pharmacist Comunication: Educational & Behavioral Interventions

This course deals with pharmacist communication with patients and other health care givers, skills in listening, interviewing, counseling, and use of various educational and behavioral strategies to improve drug uses are included here. The learning activities and assessment for communication skills will include role play among the students prior to interact with the patients and other health care professionals.

Credits: 3, Prerequisite: ENG 102, PHRM 211, PHRM 315

PHRM 416: Geriatric Pharmacy Practice

The course is designed to provide health professional students with the general understanding of the elderly population and the medical care they receive. The course considers sociological-psychological aspects of aging and their effects on health delivery for the elderly. Research on aging will also be covered.

Credits: 3, Prerequisite: PHRM 304, PHRM 305, PHRM 402

PHRM 417: Jurisprudence, Laws and Ethics

This course is introduced to offer insights of Statute Law, Common Law; Laws of Professional responsibility and Liability, Insurance, Discipline, Confidentiality, Malpractice, Negligence etc. Students will also learn (a) Food and Drug Act, Schedules, and Regulations (b) Narcotic Control Act, Schedules and Regulations (c) Hazardous Products Act (d) Pharmacist Regulations of Excise Act. Other major headlines cover issues on: moral philosophy and ethical principles, professional ethics, code of conducts, Pharmacist's rights and duty to ensure rational and efficient drug utilization, patients rights (autonomy), socioeconomic concerns-conflict between service to the patient, justice (or fairness), costs encountered in the delivery of health care, government, management, ethical Practice - quality assurance conflict resolution, conforming to ideals, barriers - time, money, subservience to physicians, consumer expectations.

Credits: 2, Prerequisite: None

PHRM 418: Bioinformatics and Molecular Modeling

Molecular Sequence Analysis: Analysis of nucleic acid and protein sequences, Emphasis on the application of algorithms to biological problems, Sequence alignment, Database searching, Comparative genomics, Phylogenetic and clustering analyses, Pairwise alignment, Multiple alignment, DNA sequencing, Scoring functions, Phylogenetic tree, Gene finding/DNA statistics; Biological Databases: Introduction to the feature of biological data, how the data are organized efficiently in databases, utilization of the data source to solve biological problems, Relational databases, Object oriented databases, Survey of current biological database with respect to above.

Credits: 3; Prerequisite: CSE 107/ICE 107, CSE 301/ICE 301

PHY 101: Basic Physics

Vectors: Vectors and scalars, Algebra of vectors, Differentiation and integration of vectors, Gradient, Divergence and curl; Waves and Oscillations: Simple harmonic motion (SHM), The force of SHM, Energy consideration in SHM, Damped harmonic motion, Forced oscillation and resonance, Different types of waves, Transverse and longitudinal waves, Definition of fundamental quantities relevant to waves, The speed of a travelling wave, Interference of waves, Standing waves and resonance, Sound waves, Intensity and sound level, The Doppler effect; Electric Field and Gauss' Law: Electric charge, Coulomb's law, The electric field, Electric field produced by different systems of electric charge, Gauss' law, Applications of Gauss' law in planner, cylindrical and spherical symmetries; Electric Potential and Capacitance: Equi-potential surfaces, Potential due to a point charge, Potential due to an electric dipole, Definition of electron volt, Relation between electric field and electric potential, Capacitors in parallel and series connections, Capacitors with dielectrics, Energy stored in capacitors; Electric Current: Current density, Resistance and resistivity, Ohm's law; The Magnetic Field: Biot-Savart law, Ampere's law, Solenoid and toroids; Faraday's Law and Maxwell Equations: Faraday's law of electromagnetic induction, Self-induction and mutual induction, Differential form of the maxwell equations; Physical Optics: Concept of light, Reflection and refraction, Total internal reflection, Interference of light, Michelson's interferometer, Diffraction of light, Diffraction gratings, Polarization of light.

The course includes lab work based on theory taught.

Credits: 3+1=4; Prerequisite: MAT 101

PHY 102: Modern Physics

Quantum Mechanics: Light waves and photons; The photoelectric effect, de Broglie waves or matter waves, Group velocity and phase velocity, Compton effect, Concept of wave function, Concept of operators in quantum mechanics, Postulates of Quantum mechanics, Uncertainty principle, Wave function and Schroedinger equation, Probability interpretation, Potential barrier and quantum tunneling, Potential well, Hilbert space, bra and ket notations of state vectors, Elements of matrix formulation of quantum mechanics; Atomic Physics and Lasers: The Bohr atom model, Electron energy levels and spectra, Stimulated emission, Inverse population, Optical pumping, Generation of coherent radiation (lasing action), Time coherence, Spatial coherence, Population inversion and stimulated emission, Gas laser, YAG laser, Raman laser, Semiconductor laser, Application of lasers; Condensed Matter Physics: Basis and lattice of crystals, X-ray diffraction in crystals, different types of bonding in solids, free-electron theory of metals, Boltzmann distribution, Fermi-Dirac distribution, Elements of band theory of solids, Difference between metals, Semiconductors and insulators, Physics of semiconductors; Nuclear Physics: Nucleons, Nuclear size, Nuclear properties, Binding energies and radioactive decays, Fission and fusion reactions, Fundamental particles.

The course includes lab works based on theory taught.

Credits: 3+1=4; Prerequisite: MAT 102, PHY 101

STA 101: Introduction to Statistics

Definition and Scope of Statistics, Variables, Levels of Measurements, Qualitative and Quantitative Data, Population and Sample, Construction of Table, Frequency Distribution, Graphical Presentation of Data: Bar Diagram, Pie Diagram, Line Diagram, Frequency polygon, Histogram, Cumulative Frequency Polygon, Scatter Diagrams, Measures of Central Tendency: Arithmetic Mean, Median, Mode, Geometric Mean, Related Positional Measures: Quartile, Percentile and Decile, Measures of Dispersion: Range, Mean Deviation, Variance, Standard Deviation, Skewness and Kurtosis, Basic Concepts of Probability, Probability Laws, Independence, Conditional Probability and Mathematical Expectations, Bayes Theorem, Basic Concepts of Discrete and Continuous Probability Distributions: Binomial, Hypergeometric, Poisson and Normal Distributions, Simple Correlation and Regression.

Credits: 3; Prerequisite: MAT 100.

STA 102: Statistics and Probability

Introduction: Nature and scope, Nature of statistical data, Attribute and variables, Discrete and continuous variables, Method of data collection, Tabulation, Graphs and diagrams; Measure of Location: Characteristics of an ideal measure, Arithmetic mean, Geometric mean, Harmonic mean, Median, Mode, Quartiles, Deciles, Percentiles,; Measure of Dispersion: Absolute measure, Relative measure, Range, Standard deviation, Mean deviation, Quartile deviation, Coefficient of dispersion, Coefficient of variation, Skewness and kurtosis; Regression and Correlation: Relationship between variables, Fitting of regression lines, Simple correlation, Multiple correlation and regression; Theory of Probability: Meaning and definition of probability, Meaning and definition of various terms of probability, Theorems of total, Compound and conditional probability, Random variables, Bayes theorem, Discrete and continuous random variables, Probability function, Expectation of sum and products, Concept of Binomial, Poisson and Normal distribution, Random process, Autocorrelation function of a random process, Multiple random processes, Basic concepts of discrete and continuous probability distributions, Markov process, Queuing process; Sampling Technique: Simple random sampling, Stratified random sampling and systematic sampling; Test of Significance: Test of means, Variance, Correlation coefficients and regression coefficient.
Credits: 3; Prerequisite: None

STA 327: Statistics For Business and Economics

Introduction to modern theory and methodology of statistics in areas of economics and business. Topics include: sampling theory and methodology of sampling distributions and hypothesis testing, contingency tables, multiple regression, analysis of variance, decision theory, index number and time series analysis.
Credits: 3; Prerequisite: MAT 311,STA 101

Students in the Library

Faculty Members

Faculty members are chosen through a rigorous selection process. Applications are first scrutinized at the department level, and then processed through an Appointment Committee of the university. Acting on the recommendations of the Appointment Committee, the Board finally appoints Faculty members.

At the moment about 80% of the Faculty members of East West University work full time. List of Faculty Members is shown below:

Professor

Dr. Syed Ferhat Anwar
M.Sc. (Biochemistry), MBA (Marketing), DUT, and Ph.D.

Mr. Abdul Mannan
M.Com (Management), University of Dhaka, MBA (Marketing), University of Hawaii, Hawaii, U.S.A.

Dr. Mohammad Musa
MSS (Economics) University of Dhaka, MBA (Finance), University of Wisconsin-Madison, Ph.D., (Finance), University of Wisconsin-Milwaukee.

Dr. Sultan Ahmad
M.Sc. (Statistics), Rajshahi University, Ph.D., (Demography) Australian National University, Canberra, Australia.

Dr. Md. Mozammel Huq Azad Khan
M.Sc. Engg. (Computer Engineering) Bangladesh University of Engineering and Technology, Ph.D., (Computer Science & Engineering) Bangladesh University of Engineering & Technology.

Dr. M. Shahidullah
MA (ELT), Thames Valley University, London, DIP TEFL, University of Sydney, Australia, Ph.D., (ELT), University of Pune.

Dr. Md. Saleh Uddin
Ph.D. (Economics) University of Malaya, Kuala Lumpur, M.A. (Economics) Chittagong University, M.A. in Economics, Thammasat University, Bangkok.

Dr. Mohammad Huzzot Ali Pramanik
M.Sc. (Physics) University of Rajshahi, Ph.D. Imperial College London University.

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M.Com. in Accounting, University of Dhaka, Ph.D. University of Dhaka.

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M.Sc. in Physics, Jahangirnagar University and Ph.D. in Appl. Math., University of St. Andrews, UK.

Dr. Rebecca Sultana
M.A. (English Literature) Chittagong University, M.A. (American Literature) University of Texas at Dallas. Ph.D., (Postcolonial Theory and Literature) Taxas Christian University, Fort Worth, Texas, USA.

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Post-graduate Diploma in TESL/TEFL University of Wales, U.K.

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MS (USSR), MBA (Finance) Keller Graduate School of Management, Chicago Illinois, U.S.A.

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Ph.D. (Financial Management & Quantitative Techniques), Pune University, Poona, India.

Mr. Syed Akhter Hossain
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Assistant Professor

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Mr. Mohammad Salek
MBA from Bangkok University.

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