EAST WEST UNIVERSITY

excellence in education

UNDERGRADUATE BULLETIN 2007

An institution that promotes eastern culture and values and meaningfully blends eastern and western thought and innovation

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Undergraduate Bulletin 2007
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 of Bangladesh, is an institution that promotes eastern culture and values, and meaningfully blends eastern and western thought and innovation. 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, tertiary 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 its intention to provide 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 the 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 located at 45, Mohakhali Commercial Area, Dhaka. Today there are over 187 faculty members and approximately 5000 students enrolled through a process of selection.

Accreditation and Collaboration

East West University is accredited by the Government of the People's Republic of Bangladesh, and its curricula and 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 the following leading universities:

Pace University, New York, USA
Suffolk University, Boston, USA
Southern Illinois University at Carbondale, USA
University of Luton, Bedfordshire, England, UK
University of Fukui, Fukui City, Japan

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

Location

The temporary campus is located at 41, 43, 44, 46 and 49 Mohakhali C/A, Dhaka. It consists of 5 (five) buildings-3 (three) twelve-storied, 1 (one) fifteen-storied and 1 (one) six-storied–with approximately 1,64,000 (one lakh and sixty-four thousand) sq.ft. of space. The campus is situated in the heart of the city and can be easily accessed by all modes of public transport.

With a view to building its own campus, EWU has purchased 555.75 decimals of land at Mouja Vadham, P.S. Tongi, District Gazipur. It has also received an allotment of 1 (one) bigha of land in Uttara from RAJUK. The university has purchased a total of 7.4 bigha land at Aftabnagar, Rampura on the Progoti Sarani adjacent to BTV. Design of the new campus at Aftabnagar is underway and construction work will commence this year. The University intends to move to its own campus by Fall 2009.

Faculties

There are currently three academic Faculties :

- Faculty of Business & Economics
- Faculty of Sciences & Engineering
- Faculty of Liberal Arts and Social Sciences

There are 8 (eight) separate Departments operating under these three Faculties.
English is the medium of instruction and of examinations for all programs.

Degrees Offered

Currently, EWU offers the following four-year Bachelor's Degrees:

- B.B.A. (Majors in Accounting, Marketing, Finance, Management, International Business, Human Resource Management (HRM) & Management Information System (MIS)
- B.S.S. in Economics
- B.A. in English
- B.Sc. in Computer Science
- B.Sc. in Computer Science and Engineering
- B.Sc. in Electrical and Electronic Engineering
- B.Sc. in Information and Communications Engineering
- B. Pharm (Bachelor of Pharmacy)

EWU plans to offer the following Bachelor's degree programs in the near future:

- Nursing
- Law
- Journalism
- Health Management
- Management Information System (MIS)
- Population Sciences
- Applied Physics and Electronics
- Electronics and Telecommunications Engineering (ETE) (under process of approval)
- Biomedical Engineering

EWU also offers the following Graduate (Masters) Degrees:

- MBA Regular and Executive
- Master of Arts in English (MA in English)
- Master of Bank Management (MBM)
- Master in Development Studies (MDS)
- Master of Laws (LLM)
- Master of Computer Applications (MCA)
- Master of Science in Computer Science and Engineering (MS in CSE)
- Master of Science in Telecommunications Engineering (MS in TE)
- Master of Population Reproductive Health, Gender and Development (MPRHGD)
- M. Pharm. (Under process of approval)

Semesters

All programs (except B Pharm) operate on a 3-semester per year system.
Spring Semester:January-April (starting on the second Sunday of January)
Summer Semester: May-August (starting on the second Sunday of May)
Fall Semester: September-December (starting on the second Sunday of Sept)
The B.Pharm Program follows a two-semester system:
Spring Semester (January-June) and Fall Semester (July-December).

Class Meetings

Classes are held from Sunday through Thursday. For each 3-credit course, there are 2 (two) classes per week, each of one and a half hours duration. For 1 credit of lab, 2 hours of lab work per week is assigned. Four class slots available in a week are:

Slot	Day
ST	Sunday, Tuesday
SR	Sunday, Thursday
TR	Tuesday, Thursday
MW	Monday, Wednesday

If classes cannot be held as scheduled due to unavoidable reasons, make-up classes are arranged to ensure there is no loss or session jam.

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 catalog 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.

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

Administration

President	Jalaluddin Ahmed, MS in Public Health (MSPH)
Vice Chancellor	Mohammed Sharif, Ph.D.
Treasurer	
Pro-Vice Chancellor	
Adviser	Professor Nurul Islam
Dean of the Faculty of Business and Economics	Professor Md. Abdul Hye, Ph.D.
Dean of the Faculty of Sciences and Engineering	Professor Abu Saleh Abdun Noor, Ph.D.
Dean of the Faculty of Liberal Arts and Social Sciences	
Registrar	Colonel Shah Murtoza Ali (Retd), M.Sc, PGDPM
Joint Registrar	
Chief of HR & Logistics	K. M. Safiuddin Chowdhury, MBA
Deputy Registrars	Sk. Ruhul Amin, B.Com.
	Mashfiqur Rahman, MBA
Assistant Registrars	Shafik Waes, MSS
	Mohammad Mosharrof Hussain Mridha, MBA
Controller of Finance & Accounts	S. A. Satter, M. Com. (Accounting)
Joint Librarian	Md. Nazim Uddin, M. A.
Chief, Internal Audit Unit	Md. Shahjahan Ali Mallick, M. Com. (Accounting)
Secretary to the Board	M. Abdullah, Ph.D.
Systems Manager	Md. Mahabub Alam, B. Sc. Engineering (EEE)

Departments & Programs

Business Administration	Professor Tanbir Ahmed Chowdhury, Ph.D.	Chairperson
Computer Science & Engineering	Syed Akhter Hossain, M.Sc.	Chairperson
Economics	Mohammed Farashuddin, Ph.D.	Chairperson
English	Asit Roy Choudhury, MA	Chairperson
Electrical and Electronic Engineering	Professor Anisul Haque, Ph.D.	Chairperson
Applied Physics & Communications Engineering	Professor Mohamed Ruhul Amin, Ph.D.	Chairperson
Pharmacy	Professor A. Z. M Ruhul Momen, Ph.D.	Chairperson
Social Sciences	Professor Nasreen Wadud, Ph.D.	Chairperson
MBA/EMBA & MBM Programs	Professor Muhammad Ziaulhaq Mamun, Ph.D	Adviser
MBA/EMBA & MBM Programs	Professor Tanbir Ahmed Chowdhury, Ph.D.	Coordinator
Career Counseling Center	S. I. Nusrat A Chaudhury, MBA	Head
	Mohammad Ghulam Rahman, Ph.D.	Proctor

EWU Academic Departments

Faculty of Business and Economics

Department of Business Administration
Undergraduate Studies
Bachelor of Business Administration (BBA) - 123 Credits
Graduate Studies
Master of Business Administration (MBA) - 60 Credits
Master of Business Administration, Executive Program (EMBA) - 42 Credits

Department of Economics
Undergraduate Studies
Bachelor of Social Science (Economics) - 123 Credits
Graduate Studies
Master of Bank Management - 60 credits
Master of Development Studies - 39 credits
Master of Economics and Law - 50 credits (under preparation)
Master of Public Policy - 30 credits (under preparation)
Master of Economics - 30 credits (under preparation)

Faculty of Liberal Arts and Social Sciences

Department of English
Undergraduate Studies
BA in English - 123 credits
Graduate Studies
MA in English - 36 credits/ 45 credits

Department of Law
Graduate Studies
Master of Law and Legislature (LLM) - 24/30 credits

Department of Social Sciences

Faculty of Sciences and Engineering

Department of Computer Science & Engineering
Undergraduate Studies
BSc. in Computer Science (CSC) - 130 credits
BSc. in Computer Science & Engineering (CSE) - 143 credits
Graduate Studies
Master of Computer Applications (MCA) - 60 credits
Master of Science in Computer Science and Engineering (MS in CSE) - 33 credits

Department of Electrical and Electronic Engineering
Undergraduate Studies
BSc. in Electrical and Electronic Engineering (EEE) 146 - 151 credits

Department of Pharmacy
Undergraduate Studies
Bachelor of Pharmacy (B. Pharm) - 158 credits
Master of Pharmacy (M. Pharm) - 36 credits

Department of Applied Physics & Communications Engineering
Undergraduate Studies
BSc. in Information and Communications Engineering (ICE) - 140 credits
Graduate Studies
Master of Science in Telocommunications Engineering (MS in TE) - 35 credits

Graduation Requirements

Graduation Requirements for Undergraduate Programs

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

1. Compeltion of a minimum of 123 credit for BA in English, BBA and BSS in Economics degrees, 130 credits for BSc in Computer Science degree, 140 credits in BSc. in ICE degree, 143 credits in BSc. in CSE degree, 146 credits in BSc in EEE degree and 158 credits for B. Pharm degree. Residency requirement requires that at least 50% of courses must be completed at EWU.
2. Earning at least a minimum CGPA of 2.00. The CGPA will be calculated on the basis of grades earned in the courses.
3. Applying to the Registrar stating their intentions that they want to be considered for the award of the Bachelor degree in the relevant discipline. A Graduation Fee is mandatory for every graduating applicant and is due at the time of submitting the application.
4. Payment of all university dues.
5. 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

Undergraduate students are allowed to do minor in one or more areas. The minor must be from department other than his/her own. Students doing minor must complete a minimum of seven courses of which at least four courses must be clean. Students intending to do a minor must apply in writing to the respective Dean of Faculty for permission after completing 50% of courses with a minimum CGPA of 2.50 for his/her base degree. Students must have a minimum CGPA of 2.00 to qualify for a minor.

Requirements:

Courses students have to complete for minor for each area are given below.

Business Administration

Compulsory Courses: ACT 101, FIN 101, MGT 101 & MKT 101

Optional Courses: (Any Three)

ACT 201, BUS 231, BUS 361, ECO 328, FIN 201, MGT 251, MGT 337 & MKT 201

Economics

ECO 101, ECO 102, MAT 110, ECO 301, ECO 302 plus any two 300/400 level economics courses.

English

Core Courses: ENG 145/ENG 191, ENG 309, ENG 310

Elective Courses: ENG 226, ENG 313, ENG 430, ENG 435

Information and Communications Engineering

Group A: Any five from the following courses: ICE 211, ICE 302, ICE 303, ICE 310, ICE 312, ICE 314 ICE 320, ICE 412

Group B: Any two from the following courses: ICE 414, ICE 415, ICE 423, ICE 435

Computer Science and Engineering

Group A: Any five from the following courses: CSE 105, CSE 107, CSE 207, CSE 245, CSE 301 CSE 412, EEE 109, EEE 204, EEE 251, EEE 255

Group B: Any two from the following courses: CSE 410, CSE 432, CSE 442, CSE 480

Electrical and Electronic Engineering

Group A: Any five from the following courses: EEE 101, EEE 102, EEE 201, EEE 301, EEE 302 EEE 303, EEE 306, EEE 307, EEE 308

Group B: Any two from the following courses: EEE 401, EEE 403, EEE 416, EEE 423, EEE 445

Department of Business Administration

The Department of Business Administration at East West University started its operation in September 1996. Since its inception it has been offering undergraduate program in Business Administration. The contemporary and innovative curriculum of BBA degree is based upon a compelling philosophy of teaching that allows students to cope with the radical transformation that business activities have been undergoing in the wake of globalization. It covers the recent development in business as well as the areas that have traditionally formed the core of the business discipline.

Program Mission

The primary mission of the BBA program of EWU is to enhance the capabilities of students and to train them as efficient and effective leaders in diverse areas of business. It intends to provide students with an integrated and practical knowledge to understand and manage current and anticipated business challanges in a socially responsible manner.

Program Objective

The BBA program at EWU is so designed as to provide the students with opportunities and expertise to achieve a successful career goal. More specifically, a graduate of Business Administration is expected to attain a high level of skill to be able to:

- Assess local and global business, geopotical, legal and economics environment and changes taking place thereto.
- Understand the importance of and formulate if it is needed, strategic goals of business organization.
- Design and implement plans at various levels to achieve strategies goals.
- Perform efficiently and effectively the marketing, operations, finance & accounting, HRM and MIS functions of a business organization.
- Provide leadership in the worksetting for maximum results.
- Acquire interpersonal communication skills.

Present Status and Future Direction

At present the BBA program at EWU offers concentration in six areas: Accounting, International Business, Management Information System, Finance, Marketing, Management, and Human Resources Management. To qualify for the BBA degree at EWU one has to complete a minimum of 41 courses (123 credits) that normally takes four and half years. Students may complete the degree earlier by enrolling in more than three courses each semester.

Of the 41 courses that a student must complete for the degree, 11 are General Education Courses, 20 are Core Courses, three are Open Elective Courses six Concentration Courses and internship/project work. Students may be allowed to do concentration in two areas. Students already graduated may also be allowed to do relevant courses for concentration for which a separate certificate will be issued by the Department Chair. Students are also required to do Internship/Project that helps expose them to practical world of corporate business. The course curriculum is continuously updated to suit the needs of the market. We continuously keep in touch with the corporate world through a number of programs. Notable among these are 'Know the Success Story: Meet the Personality Behind Success' program where renowned business leaders of the country are invited to speak before our students. Seminars are organized regularly where company executives are invited as guest speakers.

Total number of students currently enrolled in the BBA program is about 2800. The number of applicants seeking admission into the BBA program of EWU has been increasing at a very

high rate. The acceptance rate in the last two semesters was about 20 percent only. One reason is the deliberate policy of the university to keep the number of students at or around its present level. We are putting more emphasis on quality than on quantity. So far a total of 610 students graduated from this department. A sizeable number of them are now working with reputation in very prestigious organizations like British American Tobacco Co Ltd., Unilever (Bd.) Ltd., Standard Chartered Bank, Grameen Phone Ltd., ADCOM, Banglalink etc.

The main strength of the BBA program at EWU lies in its highly skilled and dedicated faculty members. We have the highest number of full-time faculty members among all private universities of the country. At present 14 out of our 30 faculty members are Ph. Ds from reputed universities. We have been continuously striving to maintain a reasonably high teacher-student ratio.

The courses that are offered for BBA students are shown in the following pages.

Professor Dr. Iajuddin Ahmed, The President of the People's Republic of Bangladesh and the Chancellor of East West University is handing over a crest to the Vice Chancellor of EWU on the occassion of Sixth Convocation Ceremony 2007.

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 any three courses from the following		
BUS 321	Business for Engineering & Technology	3
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
GEN211	Concepts of Journalism & Media Studies	3
GEN212	Women in Development	3
GEN213	Introduction to German Language	3
GEN214	Development Studies	3
GEN301	Principles of Public Relations	3
GEN302	Development Studies	3
GEN303	Globalization and Social Identity	3
MAT100	College Mathematics (Compulsory for those students who have no mathematics in HSC or equivalent level)	

Course	Title	Credit
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 211	Mathematics for Business and Economics II	3
MGT 101	Principles of Management	3
MGT 251	Organizational Behavior	3
MGT 337	Production Operations Management	3
HRM 301	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 217	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 any two courses from the following		
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/ITB 465	International Financial Management	3

Choose any three courses from the following

ACT 311	Taxation	3
FIN 335	Financial Institutions and Markets	3
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/ ECO328	International Economics	3
ITB /FIN465	International Finance Management	3

Choose any three courses from the following

ITB 445	International Financial Institution	3
ITB 450	International Business Negotiations	3
ITB 455	Country Risk Analysis	3
ITB 460	International Competitiveness	3
ITB/MKT 408	International Marketing	3

d) Concentration in Management

MGT 402	Management Science	3
MGT 421	Entrepreneurship Development	3
MGT 465	Leadership Management	3

Choose any three courses from the following

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	Structured Programming	3
MIS 402	System Analysis and Design	3
MIS 404	Networking and Operating System	3
MIS 406	Relation Database Management System	3

Choose any two courses from the following

MIS 403	Object Oriented Programming	3
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 410	Database Systems	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 any four courses from the following

MKT 401	Sales Management	3
MKT 402	Integrated Marketing Communication	3
MKT/ITB 408	International Marketing	3
MKT 412	Service Marketing	3
MKT 411	Export-Import Management	3
MKT 416	Brand Management	3
MKT 418	Supply Chain Management	3
MKT 430	Strategic Marketing	3

g) Concentration in Human Resource Management

HRM411	Human Resource Planning	3
HRM412	Compensation Management	3
HRM414	Industrial Relations	3

Choose any three courses from the following

HRM415	Training and Development	3
HRM416	Strategic Human Resource Management	3
HRM417	Human Resource Information System	3
HRM418	Job Analysis and Performance Appraisal	3
HRM419	Leadership, Power and Influence	3
HRM420	Organization Development	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 ICE, and/or ENG department. Students will not be allowed to take the following two courses as Open elective course: ICE 301 (Network Technology) and ICE 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 the following		
BUS 498	Project Work	3
BUS 499	Internship	3

Credit requirements for a second major in Marketing, Finance, Accounting & Management

Credit Hour Requirement for a second major in BBA for non-BBA students 51

Required core coureses		**33**
MAT 110	Mathematics for Business and Economics I	3
STA 101	Introduction to Statistics	3
ECO 101	Principles of Microeconomics	3
ECO 102	Introduction to Macroeconomics	3
MAT 211	Mathematics for Business and Economics II	3
STA 217	Statistics for Business and Economics	3
ACT 101	Financial Accounting	3
FIN 101	Principles of Finance	3
MGT 101	Principles of Management	3
MKT 101	Principles of Marketing	3
BUS 231	Business Communication	3
ANY ONE	**ACT 201/FIN 201/MKT 201/MGT 251**	**3**
Major Courses ACT/FIN/IB/MKT/MGT/MIS		**15**

Same as BBA students, 5 courses from the concentration area

A Class in Progress

Faculty Members of the Department of Business Administration

Professor

Abdul Mannan
MBA in Marketing
(University of Hawaii, Hawaii, USA)

Md. Saleh Uddin
Ph.D. in Economics
(University of Malaya, Kuala Lumpur)

Md. Abdul Hye
Ph.D. in Accounting
(University of Dhaka)

Tanbir Ahmed Chowdhury
Ph.D. in Financial Management & Quantitative Techniques
(University of Pune, India)

Associate Professor

S I Nusrat A Chaudhury
MS (USSR)

Nargis Akhter
Ph.D. in Human Resource Management
(University of Dhaka)

Monowar Hossain Mahmood
M.A. (Leeds)
Ph.D., Manchester

Assistant Professor

Kazi Khaled Shams Chisty
MBA, (Columbia State University, USA)

S S M Sadrul Huda
Master of Science in Leisure & Environment
(Wageninjen, Agricultural University, The Netherlands)

Nahid Hasan Khan
M.Com. in Accounting
(University of Dhaka)

Kamrul Hassan
MBA in Finance
(IBA, University of Dhaka)

Senior Lecturer

Mohammad Behroz Jalil
MBA in Human Resource
(IBA, University of Dhaka)

Hasan Shirazi
MBA, (East West University, Dhaka)

Omar Faruq
MBA, (University of Hull, UK)

Mohammad Abdur Razzak
LL.M. (Specialized)
(University of Nottingham)

Chowdhury Golam Hossan
Master in E-Business Management
(International University of Japan) (On Leave)

Muhibbul Islam
MBA (Executive Program) in Human Resource Management and Finance
(East West University, Dhaka)

Farhana Ferdousi
MBA in Management Information System
(University of Dhaka) (On Leave)

Jashim Uddin
MBA in Strategic & International Management
(Faculty of Business Studies, University of Dhaka)

Mahmud Zubayer
MBA in International Business
(Florida Metropolitan University, USA)

Md. Lutfur Rahman
MBA in Finance
(University of Dhaka)

Nikhil Chandra Shil
MBA, Faculty of Business Studies
(University of Dhaka)

Sardana Islam Khan
M.Com. in Management
(University of Dhaka)

M Sayeed Alam
MBA in Marketing
(North South University)

Rumana Parveen
MBA in Strategic and International Management
(University of Dhaka)

Muhammad Shariat Ullah
MBA in Strategic & International Management (SIM)
(University of Dhaka)

Md. Habib-uz-Zaman Khan
MBA in AIS
(University of Dhaka)

Nayel Jamilur Rahman
MBA in Finance
(University of Dhaka)

Mohammad Anisur Rahman
MBA in Management Information System
(University of Dhaka)

Lecturer

Mohammad Zakaria Masud
Master of Business Administration in Accounting (University of Dhaka)

Md. Shahriar Akter
MBA in Marketing (University of Dhaka). (On Leave)

Nayeema Ahmed
M.Com. in Marketing (The University of New South Wales Sydney, Australia)

Mamunur Rashid
MBA in Finance (East West University, Dhaka)

Quazi Sagota Samina
MBA in Finance & Banking (University of Dhaka)

Taskina Ali
MBA in HRM (University of Dhaka)

Farhan Faruqui
MBA in Finance (IBA, University of Dhaka)

Saadia Shabnam
MBA in Marketing (University of Dhaka) (On Leave)

Faridul Alam
MBA in Accounting & Information Systems (University of Dhaka)

Mohammad Al- Mamun
MBA in Finance (University of Dhaka)

Tahmid Nayeem
MBA in Management of IT (Schiller International University London, UK) (On Leave)

Mohammad Bayezid Ali
MBA in Banking (University of Dhaka)

Mujahid Mohiuddin Babu
MBA in Marketing (University of Dhaka)

Rezwanul Alam
MBA in MIS (Southern Ontario University, Canada)

Kashfia Ahmed
MBA in Marketing (East West University)

Shaila Ahmed
MBA in Accounting (University of Dhaka)

Md. Anamul Hoque
MBA in Marketing (IBA, University of Dhaka)

Adjunct Faculty

Mohammad Musa
Ph.D. in Finance (University of Wisconsin-Milwaukee, USA)

Mijanur Rahman
Ph.D. in Business Administration (Aligarh Muslim University, India)

S.M. Kabir
Ph.D. in Philosophy (University of Dhaka)

Barister Chowdhury
Mokimuddin Khan Jahan Ali Bar Vocational Course (The Honorable Society of Lincoln's Inn, UK)

Mohammed Yunus Khan
MBA (University of Central Oklahoma, Oklahoma, USA)

M. Shakhawat Hossan
MBA in HRM & Marketing (East West University, Dhaka)

A Class in Progress

Department of Economics

The Department of Economics at East West University is aiming to be a very strong and resourceful Economics department in Bangladesh. It has a formidable teaching faculty comprising of highly qualified and experienced professors as well as bright young economists. Research is of high priority in the department.

Economics is also the most vibrant of all social sciences in modern history. Learning Economics has always been most fascinating for brilliant students. Its academic challenges is the envy of most other sciences. At East West University, the BSS program in Economics is designed to meet the challenges of modern time. Students are trained in both theoretical and applied aspects of Economics, *Development, and Business. Keeping in view* the demand in the job market, programs in Economics are flexible but rigorous to get a grip on the challenges of globalization.

The Department offers BSS in Economics with options to complete a Second Major in Management, Marketing, Finance, Computer Science, English or in any other undergraduate disciplines available at EWU.

The Department also offers a multidisciplinary program at the graduate level. The Master in Bank Management is designed to produce the efficient workforce for banking and financial organizations. The Department has developed its second multidisciplinary graduate program in Development Studies with specializations in Evaluation and Design, Development Studies, Development Policy and Development Management. Master in Development Studies is intended to be the best academic program in the country in this field. Furthermore, the Department is currently working on developing curriculum for the Master in Economics and Law, the Master in Public Policy, and Master in Economics.

Visiting Faculty

The Department strongly believes in academic interactions with other economics departments at home and abroad. As such, 20 percent or so courses are usually planned to be taught by visiting faculty members from reputed universities at home and abroad.

Academic Programs

Undergraduate Studies

Bachelor in Social Science (Economics) - 123 Credits

Graduate Studies

Master of Bank Management - 60 credits
Master of Development Studies - 39 credits
Master of Economics and Law - 30 credits (under preparation)
Master of Public Policy - 30 credits (under preparation)
Master of Economics - 30 credits (under preparation)

Research

In close collaboration with the East West University Center for Research and Training (EWUCRT), the department is planning to undertake policy research particularly relevant to the macroeconomic and social policy framework of the country. The department envisages significant research involvement in the areas of small and medium enterprise (SME), environment, resource planning and entrepreneurship development.

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

Course	Title	Credit
General	**Education 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
Core Requirements		**54**
ECO 101	Principles of Microeconomics	3
ECO 102	Introduction to Macroeconomics	3
ECO 260	Environmental & Natural Resource Economics	3
ECO 301	Intermediate Microeconomic Theory I	3
ECO 302	Intermediate Macroeconomic Theory I	3
ECO 310	Money and Banking	3
ECO 315	Public Finance	3
ECO 328	International Trade and Finance	3
ECO 349	Economics of Development	3
ECO 360	Socio-Economic Profiles of Bangladesh	3
ECO 465	Basic Econometric	3
ECO 467	Intermediate Microeconomic Theory II	3
ECO 475	History of Economic Thought	3
ECO 477	Intermediate Macroeconomic Theory II	3
ECO 490	Research Methodology	3
ECO 495	Supervised Research Paper	3
MAT 211	Mathematics for Business and Economics II	3
STA 217	Statistics For Business And Economics	3
Open Elective Courses		**36**
NOTE 1	At least 15 credits must be from ECO 3XX/4XX level	
NOTE 2	Students Must Complete BUS 231	
NOTE 3	Students May Choose 18 Credits of 3XX / 4XX Courses from any undergraduate discipline	
ECO 304	Economics of Health	3
ECO 314	Public Sector Economics	3
ECO 329	Contemporary Issues in International Economics	3
ECO 353	Economics of Development in South Asia	3
ECO 354	Environmental & Natural Resource Economics II	3
ECO 357	Mathematical Economics	3
ECO 382	Economic Valuation of Environment	3
ECO 406	International Economic Theory	3
ECO 414	Trade Policy Analysis	3
ECO 433	Gender and Development	3
ECO 443	Social Mobilization, Rural Banking & Community Organization	3
ECO 447	Applied Economics	3
ECO 449	Economics of Information	3
ECO 450	Labor Economics	3
ECO 453	Game Theory and Applications	3
ECO 460	Managerial Economics	3
ECO 474	Mathematical Economics II	3
ECO 480	Urban Economics	3
ECO 484	Project Analysis and evaluation	3
ECO 485	Cost Benefit Analysis	3
ECO 486	Energy Economics and Policy	3
ECO 487	Applied Econometrics	3
	Industrial Organization	3
ECO 491	Welfare Economics	3

ECO 492	Law and Economics	3
MAT 407	Advanced Calculus	3
MAT 470	Real Analysis	3
STA 427	Mathematical Statistics	3

Second Major in Economics

A second major in Economics is open to all undergraduate students in EWU who are enrolled in BSS Economics students. Once a student earns a second major his/her degree will have a suffix Economics, like BBA (Marketing and Economics), B.Sc (Pharmacy and Economics), etc.

The following curriculums for completing a second major for non-Economics undergraduate student in EWU.

a) Compulsory Credits	39
b) ECO 3XX/ECO 4XX level credits	06
Total Credit Requirement	45

Economics Courses		
Required compulsory courses		39
ECO 101	Principles of Microeconomics	3
ECO 102	Principles of Macroeconomics	3
ECO 260	Environmental & Natural Resource Economics	3
ECO 315	Public Finance	3
MAT 110	Mathematics For Business and Economics I	3
STA 101	Introduction to Statistics	3
ECO 301	Intermediate Microeconomic Theory I	3
ECO 302	Intermediate Macroeconomic Theory I	3
ECO 467	Intermediate Microeconomic Theory II	3
ECO 465	Basic Econometric	3
ECO 477	Intermediate Macroeconomic Theory II	3
MAT 211	Mathematics for Business and Economics II	3
STA 217	Statistics For Business And Economics	3
Elective Courses: Any two from ECO three or four hundred level courses : 06 Credits		
ECO 3XX OR ECO 4XX		06

A Class in Progress

Faculty Members of the Department of Economics

Professor

Mohammed Farashuddin
Ph. D. in Economics (Boston University, USA)
Professor and Chair, Department of Economics
Founder Vice Chancellor (1996-1998), East West University
Former Governor, Bangladesh Bank (1998-2001)
Former Lecturer, Economics, University of Dhaka (1964-66)

A. K. Enamul Haque
Ph. D. in Natural Resource Economics (University of Guelph, Canada) Founder Dean School of Business, Bangladesh Open University; Former Chair and Professor of Economics, North South University. Member of the Management and Advisory Committee, South Asian Network for Development and Environmental Economics (SANDEE)

Associate Professor

Abdus Sattar
Ph.D. in Statistics
(Kiev Institute of National Economy Kiev, Ukraine)

Assistant Professor

Md. Abdus Salam
Ph.D. in Mathematics
(Calcutta University, India)

Senior Lecturer

Jahida Gulshan
M.Sc. in Statistics
(University of Dhaka)

Ahmed Taneem Muzaffar
M.Sc. in Financial and Business Economics
(University of Essex, United Kingdom)

Iftekharul Huq
M.Sc. in Economics
(University of Warwick, Coventry, UK.)

Arup Kumar Sinha
M.Sc. in Statistics
(University of Rajshahi)

Biva Arani Mallik
MA in Economics
(York University, Canada)

Lecturer

Shajeda Khanom
M.Sc. in Pure Mathematics
(Thesis Group)
(Univerisity of Dhaka)

Saiyeeda Saniya Munim
MA in Economics
(York University, Toronto, Canada)

Kazi Naim Morshed
M.Sc. in Economics
(Swedish School of Economics and Business Administration, Finland)

Adjunct Faculty

Zaid Bakht
Ph.D. in Economics
(Cornell University)

Syed Shahadat Hossain
Ph.D. in Statistics
(Deakin University, Australia)

M A Hakim
Ph.D. in Economics
(University of Rajshahi)

Niaz Ahmed Khan
Ph.D. in Development Studies
(University of Wales, UK)

M. Amir Hossain
Ph.D. in Economics
(University of Sydney, Australia)

Ashraf Uddin Chowdhury
Ph.D. in Economics
(Birmingham University)

Quazi Mesbahuddin Ahmed
Ph.D. in Economics
(University of Illinois at Urbana-Champaign, USA)

Kh. Mezbahuddin Ahmed
Ph.D. in Mathematics, Differential Geometry
(Athense University, Athense, Greece)

Muhammad Mahboob Ali
Ph.D. in Macro-Econometric Model of a Developing Economy
(University of Chittagong)

Md. Showkat Ali
Ph.D.
(University of Glasgow, UK)

Parvez K. Abbasi
MA in Economics
(York University Toronto, Canada)

Department of English

The Department of English is one of the earliest departments to have been set up at East West University. Beginning with only one faculty member in August 1996, it now has 17 full-time and 2 part-time faculty members. The Department itself was officially established in 1997. At the outset it functioned only as a "service" department; now it offers a broad range of undergraduate and graduate courses in English language and literature to about 240 students as well as a number of compulsory courses for students of other departments of the university. At this point, 41 students have received their B. A. (Hons.) degrees from the department. In addition, 7 students have by now graduated with M. A. in English degrees from it.

The mission of the English department includes: a) to make all East West University students proficient in the English language so that they can read texts written in English without any difficulty and can speak and write it fluently; b) to produce graduates who will have mastered English literature and acquired expertise in English language teaching; c) to foster humane values in East West university students through the reading of the classics of English literature and to nurture and develop the sensibility of East West university students; d) to produce students who can work as teachers, administrators, journalists, translators, editors, and consultants through courses such as English for Professional Communications, English for Specific Purposes; Business English, Cultural Studies, Translation Studies, English for the Media, etc; e) to follow the latest developments in literary and linguistic theory and to adopt the best teaching strategies to produce students who can cope with changing times; f) to contribute to the study of the English language and literature through research and scholarship.

At present, the English department plays a key role in East West University's academic activities. Faculty members draw on their expertise gained from studies abroad and from experience gained through scholarship and fieldwork to offer quality education across the curriculum. Quite a few of them have been trained in leading universities of North America, Britain and Australia. The department is particularly strong in ELT methodology, South Asian Writing in English, and Composition. It sponsors three EW Clubs directly: the English Conversation Club and the Poetry and Drama clubs. Faculty development and research is strengthened by a regular lecture series where scholarly papers are presented and discussed.

The English department intends to develop fully into a centre specializing in teaching English across the curriculum, ELT, and the new literatures in English while continuing to offer core courses in traditional English studies. It plans to play a key role in East West University's search for excellence in education, both by providing the University's students language skills that will enable them to carry out higher education and by ensuring that faculty members keep up with the latest developments in ELT pedagogy and Literary and Linguistic Theory.

The general and specific curriculum objectives are as follows:

General

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

b) Polish, refine and develop sensibilities and cultivate professionalism in manner and behaviour of students to prepare them to be successful future leaders/civil administrators.

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

d) Promote humanitarian causes in a world dominated by commercial motives.

Specific

a) Develop excellent communication skills in English, since it is the gateway to success in professional life nowadays nationally and internationally.

b) Prepare good English language and literature teaching professionals to cater to 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 English language programs in the country.

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

e) Enable students to design and mark English language tests so that they can evaluate tests of English language and literature and also work as trainers and assessors of standard international English language tests such 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 to work with the media, e.g. as news editors in TV and as sub-editors in newspapers.

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

To meet these objectives the programme includes 4 major areas:

(1) language skills development
(2) literature
(3) linguistics, and
(4) English language teaching.

There are three different options:

a) Students can take all 10 elective courses from Literature concentration (Concentration A)

b) Students can take all 10 elective courses from Linguistics, ELT/Applied Linguistics concentration (Concentration B)

c) Students can take any 10 courses from both concentrations (from Concentration A and B above)

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

A Class in Progress

Bachelor of Arts (BA) in English

Minimum Requirement 123 Credits

Course	Title	Credits
1. General Requirements		**33**
Compulsory General Education Courses		**18**
BUS 101:	Introduction to Business	3
CSE 101:	Introduction to Computers 1	3
ENG 100:	Improving Oral Communication Skills	3
ENG 101:	Basic English	3
ENG 102:	Composition and Communication Skills	3
GEN 201:	Bangladesh Studies	3
Optional General Education Courses		**15**
Choose five courses from		
CSE 102:	Introduction to Computer 2	3
GEN 202:	Eastern Culture & Heritage	3
GEN 203:	Ecological System and Environment	3
GEN 205:	Introduction to Psychology (Compulsory for English Dept. Students)	3
GEN 206:	Introduction to Sociology (Compulsory for English Dept. Students)	3
GEN 207:	Industrial Psychology	3
GEN 208:	Introduction to Philosophy (Compulsory for English Dept. Students)	3
GEN 209:	Social Psychology	3
GEN 211:	Concept of Journalism and Media (Compulsory for English Dept. Students)	3
2. Core Requirements		**60**
ENG 145	Introduction to Linguistics: Prerequisite: None	3
ENG 154	English Phonetics and Phonology: Prerequisite: ENG 145	3
ENG 155	Improving Reading and Writing Skills; Prerequisite: ENG 102	3
ENG 191	Introduction to Literature: Fiction and Non-Fiction Prose; Prerequisite: None. This course is the prerequisite for all literature courses.	3
ENG 192	Introduction to Literature: Poetry and Drama; Prerequisite ENG 191	3
ENG 205	History of the English Language; Prerequisite: ENG 102	3
ENG 207	Psycholinguistics; Prerequisite: ENG 145	3
ENG 208	Sociolinguistics; Prerequisite: ENG 145	3
ENG 209	Political and Social History of England: Prerequisite: None	3
ENG 230	Nineteenth Century Novel; Prerequisite: ENG 191	3
ENG 245	Romantic Poetry; Pre-requisite: ENG-192	3
ENG 301	Elizabethan and Restoration Drama; Prerequisite: ENG 192	3
ENG 306	Methodology of Language Teaching: Prerequisite: ENG 145	3
ENG 309	Advanced Reading and Writing; Prerequisite: ENG 155	3
ENG 310	Shakespeare; Prerequisite: ENG 301 + at least 8 other courses	3
ENG 315	Seventeenth and Eighteenth Century Poetry;Prerequisite: ENG 191	3
ENG 403	Modern Novel;Prerequisite: ENG 230	3
ENG 412	Techniques of Teaching English Language Skills Prerequisite: ENG 145 and ENG 306	3
ENG 426	American Literature (Modern to Contemporary) Prerequisite: ENG 420 + at least 8 other literature courses	3
ENG 438	Literary Criticism; Prerequisite: Completion of at least 10 literature courses	3
3. Elective Requirements		**30**
Students will select ten courses from one of the two following concentrations.		
Concentration A: Literature		
ENG 211	Representations of Women in Literature	3
ENG 213	English Satire	3
ENG 222	Introduction to Bangla Literature	3
ENG 320	Victorian Prose and Poetry Prerequisite: ENG 191 + ENG 192 + ENG 245	3
ENG 330	English Prose from Bacon to Swift Prerequisite: ENG 191	3
ENG 340	Eighteenth Century Fiction Prerequisite 192	3

ENG 410	Continental Literature Prerequisite: Completion of at least 10 literature courses	3
ENG 420	American Literature (1620-1891) Prerequisite: - ENG 191 + at least 4 other literature courses	3
ENG 423	Old and Middle English Prerequisite: ENG 191 + any 4 other literature courses	3
ENG 424	Classics in Translation Prerequisite: ENG 191 + 4 other literature courses	3
ENG 430	Cultural Studies Prerequisite: Completion of at least 10 literature courses	3
ENG 435	Postcolonial Theory and Literature Prerequisite: Completion of at least 12 literature courses	3
ENG 440	Literary Theory Prerequisite: ENG 438	3
ENG 445	Modern Poetry Prerequisite: - ENG 320	3
ENG 450	Modern Drama Prerequisite: ENG 301 + ENG 310	3
ENG 452	Contemporary Literature in English	3
ENG 455	Comparative Literature Prerequisite: Completion of at least 12 literature courses	3
ENG 458	Feminist Readings of Literature prerequisite: 6 literature courses	3

Concentration B: ELT/Applied Linguistics

ENG 200	Advanced Oral Communication Skills (Open elective)	3
ENG 201	Theories of Writing Prerequisite: ENG 309	3
ENG 226	Business and Professional Communication (Open elective) Prerequisite: ENG 102	3
ENG 235	Teaching Language through Literature Prerequisite: ENG 145 and ENG 306	3
ENG-255	Second Language Acquisition (SLA)	3
ENG 303	Syllabus and Material Design Prerequisite: ENG 145 + ENG 306	3
ENG 305	Linguistic Theories Prerequisite: ENG 145 + ENG 154	3
ENG 307	Academic Writing Prerequisite: ENG 155	3
ENG 313	English for the Media (Open elective) Prerequisite: ENG 102	3
ENG 316	English for Specific Purposes Prerequisite: ENG 303 + ENG 306	3
ENG 319	Translation Studies (Open elective) Prerequisite: ENG 155 + ENG 309 and at least 5 literature courses	3
ENG 402	Pragmatics and Discourse Analysis Prerequisite: ENG208	3
ENG 405	Creative Writing Prerequisite: ENG 155+ENG 309	3
ENG 411	Language Acquisition Theories for EFL/ESL Contexts	3
ENG 413	Language Testing and Evaluation Prerequisite: ENG 145, ENG 207 and ENG 306	3
ENG 414	Research Methodology in ELT	3
ENG 415	Language Policy and Planning Prerequisite: ENG 208	3
ENG 417	Problems & Prospects of ELT in Bangladesh Prerequisite: ENG 145, ENG 303, ENG 306, ENG 413	3
ENG 422	Bilingualism and EFL/ESL	3
ENG 436	ELT Research Project Prerequisite: ENG 414	3
ENG 451	Computer Assisted Language Learning /Teaching(CALL/CALT) Prerequisite: 4 ELT/Applied Linguistics courses	3

Faculty Members of the Department of English

Associate Professor

Asit Roy Choudhury
Post-Graduate Diploma in TESL/TEFL
(University of Wales, UK)

Assistant Professor

Harunur Rashid Khan
MA in Applied Linguistics
(Victoria University of Wellington, New Zealand)

Shafiqur Rahman
MA in English Language
(University of Toledo, Ohio, USA)

Tahmina Begum
M.Ed. in Applied Linguistics
(Columbia University, New York)

Muhammad Shahriar Haque
Ph.D. in English Language
(University Putra Malaysia, KL, Malaysia)

Senior Lecturer

Masrufa Ayesha Nusrat
MA in English Studies
(University of Nottingham, UK)

Farzana Akhter
MA in English
(University of Dhaka) (On Leave)

Muhammad Manzur Alam
MA in English (Literature)
(University of Dhaka)

Afia Arafat
M.Phil. in English Literature
(School of Critical Humanities, Central Institute of English and Foreign Languages (CIEFL) Hyderabad, India)

Zohur Ahmed
MA in Teaching English as Second Language
(Central Institute of English and Foreign Languages, India)

Faria Tofail
MA in ELT & Applied Linguistics
(King's College London, London)

Manzoorul Abedin
MA in Applied Linguistics and ELT
(Department of English, University of Dhaka)

Zahid Akter
M.Phil. in Applied Linguistics & ELT
(University of Dhaka) (On Leave)

Hasan Al Zayed
MA in English Literature
(Jahangirnagar University)

Sarmista Mondol
MA in English Literature
(Central Institute of English & Foreign Languages Hyderabad, India)

Lecturer

Iffat Sharmin
Master of Arts in English
(East West University, Dhaka)

Naveera Ahmed
MA in English
(East West University, Dhaka)

Farhana Farid
MA in English
(University of Dhaka) (On Leave)

Subrata Kumar Bhowmik
MA in Applied Linguistics and English Language
Teaching (ELT)
(University of Dhaka) (On Leave)

Zahida Sharmin
Master of Arts in English Literature
(University of Dhaka).

Adjunct Faculty

Fakrul Alam
Ph.D.
(University of British Columbia, Canada)

Kaiser Hamidul Haq
Ph.D. in English Literature
(University of Warwick England)

Biswajit Ghosh, Ph.D.

Department of Social Sciences

The Department of Social Sciences is the newest of East West University's departments and it started functioning on June 01, 2005. It offers non-degree courses for the students of other departments helping them in fulfilling their requirements. The Department of Social Sciences offers courses in the following disciplines:

Bangladesh Studies
Eastern Culture and Heritage
Ecological System and Environment
Western Thought
Introduction to Psychology
Introduction to Sociology
Industrial Psychology
Introduction to Philosophy
Social Psychology
International Relations
Concepts of Journalism & Media Studies
Women in Development
Elementary of German Language
Principles of Public Relations
Development Studies
Globalization and Social Identity

Students of all undergraduate programs and departments at EWU are required to complete 12 credits of their total credit requirement through these courses. Department of Social Sciences offers these courses, conducts examinations, and publishes grades. This department will soon offer minor in one or more disciplines in the social sciences. In future this department intends to offer degrees in women's issues and Public Administration, and is set to become a full-fledged degree awarding department.

Department of Social Sciences is an integral part of EWU. It also hopes to offer its services to the people of the country to promote social and human resource development. The major goals of the Social Sciences Department are:

1. To provide programs that promote knowledge in the Human Sciences, History and Culture, and Development;
2. To contribute toward community and national development; and
3. To create human resources with creative and critical thinking skill, and equip them with intellectual tools for social reform.

Faculty Members of the Department of Social Sciences

Professor

Nasreen Wadud
Ph.D. in Psychology
(University of Delhi)

Senior Lecturer

Sudhangshu Sekhar Roy
Master in Mass Communication and Journalism
(University of Dhaka)

Touhida Tasnima
MSS in Public Administration
(University of Dhaka)

Lecturer

Suman Dhar
MSS in Sociology
(University of Dhaka)

Rayyan Hassan
MA in Social Change and Development
(University of Wollongong, New South Wales, Australia)

Md. Akib-Ul-Huque
MS in Psychology
(University of Dhaka)

Adjunct Faculty

A M M Shawkat Ali
Ph.D. in Public Administration
(University of Tasmania, Australia)

Fazlur Rashid Khan
Ph.D. in Sociology
(University of Edinburgh, UK)

Parveen Huque
Ph.D. in Psychology, Clinical Psychology
(University of Dhaka, Bangladesh)

Khondoker Mokaddem Hossain
Ph.D. in Development Studies
(Massey University, New Zeland)

Lutfun Nahar
Ph.D. in Demography
(University of Waikato, Hamilton, New Zealand)

Ehsanul Haque
MA in International Affairs
(Ohio University, USA)

Iftekhar Iqbal
Ph.D. in Environmental History
(Ecology, Economy and Society of Modern Bengal Delta University of Cambridge, UK)

Ware Newaz
Ph.D. in Administrative Science
(University of Tampere, Finland)

Jasim Uddin
Ph.D. in Environmental Ethics
(The University of South Wales, Australia)

Sarfuddin Ahmed
MA in German Language
(Munich University, Munich, Germany)

A Class in Progress

Department of Applied Physics & Communications Engineering

Introduction

The Department of Applied Physics & Communications Engineering (APCE) at East West University is housed under the faculty of Sciences and Engineering and is relatively a new Department of the university. The department has, at present, 20 teaching faculty members, among which 13 are full-time and 7 are Adjunct. The Department is going to recruit few more teaching faculty members very soon. Apart from the teaching faculty members, there are some Teaching Assistants working in the Department.

The APCE Department offers the core and some elective courses of the undergraduate Information & Communications Engineering (ICE) program and graduate Telecommunications Engineering program and the following basic science courses for different undergraduate degree programs under the faculty of Sciences & Engineering of the university: PHY 100, PHY 101, PHY 102, MAT 101, MAT 102, MAT 104, MAT 201, MAT 301, and STA 102, Detail contents of the above courses are described elsewhere in the brochure.

Academic Programs

At present, the Department of Applied Physics & Communications Engineering offers undergraduate B.S. degree program in Information & Communications Engineering (ICE) and graduate M.S. program in Telecommunications Engineering. Process of starting Bachelor of of Science (B.S) program in Electronics & Telecommunications Engineering (ETE) under this Department is underway. The Department has a plan also to initiate B.S and M.S programs in Applied & Engineering Physics (AEP) in the near future.

Research

The present research activities of the Department include research work in the fields of Wireless & Mobile Communications, Digital Signal Processing, Optical Waveguides, Plasma Physics, Atmospheric Physics, Lattice Theory, Game Theory, and Applied Statistics.

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

Information & 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, 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.

Our 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.

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.

Goal of the B.Sc. in ICE

- Our 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 numbers of basic and fundamental mathematics and physics courses. For example, this curriculum includes the following courses on mathematics and statistics: statistics & probability, calculus, differential equations & special functions, coordinate geometry & vector analysis, linear algebra, complex variables & mathematical transforms. It also includes two basic courses on physics: a basic physics course containing waves and oscillations, fluid dynamics, heat & thermodynamics; and the other course contains electricity, magnetism and physical optics.

- 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 & 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 computer fundamentals and programming language, object oriented programming, discrete mathematics & numerical methods, data structure & algorithm, database management systems, programming with Java, computer organization & operating systems, numerical & computational methods, etc. so that our graduates can work in computer systems industries in addition to working in telecommunications industries.

- 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 digital signal processing in the final year of the curriculum.

- In the present time, wireless & 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 a number of need based advanced courses in computer science and telecommunications. For example, we have courses like Foundations of TCP/IP, Satellite Communications, Artificial Intelligence & Expert Systems, Neural Networks, VLSI Engineering, Robotic Engineering, Antenna Engineering, Wireless Networks, Design of Real-Time Systems, Distributed Systems & Algorithms, and Multimedia Communications. 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 has been designed in such a way that a student first obtains a general foundation in information & communications engineering by studying basic courses on computer science and telecommunications. Then she/he can prefer to go for either the computer systems engineering or 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 able to work in industries related to computer systems as well as telecommunications engineering.

Responsibilities of ICE Engineers

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
- Building and testing prototypes of new equipment including integrated circuit components
- Predicting telecommunication systems 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

- National Mobile Operators, for example: BanglaLink, GrameenPhone, AKTEL, City Cell, TeleTalk 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, television broadcasting channels, and other related firms
- Teaching positions for electronics, computer science and telecommunications related courses.

The Curriculum

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

a. General Requirements	21C
b. Core Courses	104C
c. Elective Courses	12C
d. Project Work/Industrial Training	03C
	140C

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

Minimum Requirement 140 Credits

A. General Requirements		21C
(i) Compulsory General Education Courses (9C)		
These THREE courses are compulsory		
ENG 101	Basic English	3
ENG 102	Composition & Communication Skills	3
GEN 201	Bangladesh Studies	3
(ii) Optional General Education Courses (6C)		
Choose any TWO courses (OPT 001 & OPT 002) from the approved General Education Courses of the University except GEN 201.		
(iii) Optional Courses from Non-Engineering Subjects (6C)		
Choose any TWO courses (OPT 003 & OPT 004) from the approved Courses under nonengineering departments of the University.		

B. Core Courses		104C
All the following core courses are compulsory		
ICE 101	Fundamentals of Information & Telecommunications	3
ICE 105	Computer Fundamentals & Programming Language	4
ICE 107	Object Oriented Programming	4
ICE 208	Data Structure & Algorithm	4
ICE 211	Electrical Circuits & Systems	4
ICE 212	Basic Electronics & Devices	4
ICE 214	Electronic Circuits	4
ICE 301	Database Systems, Software Analysis & Design	4
ICE 302	Computer Communications & Networking	4
ICE 304	Signals & Systems	3
ICE 310	Electromagnetic Theory	3
ICE 311	Digital Electronic Circuits	4
ICE 312	Analog Communications	3
ICE 314	Digital Communications	4
ICE 316	Microprocessors & Interfacing	4
ICE 319	Numerical & Computational Methods	4
ICE 320	RF & Microwave Engineering	4
ICE 325	Computer Organization & Operating Systems	3
ICE 412	Wireless & Mobile Communications	4
ICE 413	Optical Communications	4
ICE 423	Telecommunication Networks & Switching	3
MAT 101	Differential & Integral Calculus	3
MAT 102	Differential Equations & Special Functions	3
MAT 104	Coordinate Geometry & Vector Analysis	3
MAT 201	Linear Algebra	3
MAT 301	Complex Variables & Mathematical Transforms	3
PHY 101	Physics-I (Mechanics, Waves & Thermodynamics)	4
PHY 102	Physics-II (Electricity, Magnetism & Physical Optics)	4
STA 102	Statistics & Probability	3

C. Elective Course		12-16C
(Choose FOUR Courses, ECT 001- ECT 004)		
ICE 407	Digital Signal Processing	4
ICE 408	Digital Image Processing	4
ICE 409	Network Programming	4
ICE 415	Satellite Communications	3
ICE 417	Artificial Intelligence & Expert Systems	3
ICE 421	Information Theory & Error Control Coding	4
ICE 422	Foundations of TCP/IP	4
ICE 424	VLSI Engineering	4
ICE 425	VLSI for Telecommunications	4
ICE 426	Neural Networks & Applications	3
ICE 427	Computer Graphics & Visualizations	4
ICE 428	Robotic Engineering	3
ICE 430	Communications & Network Security	4
ICE 433	Multimedia Communications	4
ICE 435	Antenna Engineering	3
ICE 437	Telecommunications System Design	4
ICE 438	Wireless Networks	4
ICE 439	Design of Real Time Systems	4
ICE 440	Telecommunications Network Management	3
ICE 441	Distributed Systems & Algorithms	4
EEE 308	Electronic Properties of Materials	3
EEE 402	Introduction to Control Systems	4

EEE 411	Quantum Phenomena in Nanostructures	3
EEE 412	Theory of Semiconductor Devices	3
EEE 413	Introduction to Nanotechnology	3
EEE 414	Optoelectronics	4

D. Project Work/Industrial Training		**3C**
Choose any ONE course		
ICE 498	Project Work	3
ICE 499	Industrial Training	3

E. Flowchart for Undergraduate ICE Courses

Flow-Chart for Courses to be followed during the FOUR YEARS of the Undergraduate Program of ICE (Numbers in parentheses indicate Credit Hours)

	Year I (10 courses)		Year II (10 courses)		Year III (10 courses)		Year IV (11 courses)	
	Course	Prereq	Course	Prereq	Course	Prereq	Course	Prereq
SEM 1	ENG 101 (3) ICE 101 (3) MAT 101(3)	None None None	GEN 201 (3) ICE 211 (4) MAT 102 (3)	ENG 102 PHY 102 MAT 101	OPT 003 (3) ICE 301 (4) ICE 304 (3)	ENG 102 ICE 208 MAT301	ICE 319 (4) ICE 320 (4) ICE 325 (3)	ICE 208 ICE 310 ICE 316
SEM 2	ENG 102 (3) ICE 105 (4) MAT 104 (3) PHY 101 (4)	ENG 101 ICE 101 MAT 101 MAT 101	OPT 001 (3) ICE 208 (4) ICE 212 (4) MAT 201(3)	ENG 102 ICE 107 ICE 211 MAT 102	OPT 004 (3) ICE 310 (3) ICE 311 (4) ICE 312 (3)	ENG 102 PHY 102 ICE 214 ICE 304	ICE 412 (4) ICE 413 (4) ECT 001 (3/4) ECT 002 (3/4)	ICE 314 ICE 314 ICE 314 ICE 314
SEM 3	ICE 107 (4) PHY 102 (4) STA 102 (3)	ICE 105 PHY 101 MAT 101	OPT 002 (3) ICE 214 (4) MAT 301(3)	ENG 102 ICE 212 MAT201	ICE 302 (4) ICE 314 (4) ICE 316 (4)	ICE 208 ICE 312 ICE 311	ECT 003 (3/4) ECT 004 (3/4) ICE 423 (3) ICE 498/499(3)	ICE 314 ICE 314 ICE 314 ICE 314
Total Cr	**34 Credits**		**34 Credits**		**35 Credits**		**37-41 Credits**	

Legends

OPT 001 & OPT 002:Any TWO Optional General Education Courses approved by the university.
OPT 003 & OPT 004:Any TWO Optional Courses from Non-Engineering Departments.
ECT 001 - ECT 004:Any FOUR Elective Courses Prescribed in the Curriculum.

Faculty Members of the Department of Applied Physics & Communications Engineering

Professor

Abu Saleh Abdun Noor
Ph.D., Flinders University of S. A., Australia, 1980, Lattice Theory

Mohamed Ruhul Amin
Ph.D., University of St Andrews, U.K., 1990, Theoretical Plasma Physics

Assistant Professor

Gurudas Mandal
Ph.D., University of Pune, India, 2003, Atmospheric Physics

Ramit Azad
Ph.D., Peoples' Friendship University of Russia, Moscow, Russia, 2001, Theoretical Physics.

Senior Lecturer

Anindita Paul
M.Phil, BUET, 2005, Mathematics; Game Theory

Mustafa Mahmud Hussain
M.Sc., King's College, University of London, U.K., 2003, Communications Engineering

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M Rakibul Hasan
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Lecturer

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M.Sc., Jahangirnagar University, 1997, Physics

Imteaz Khan
M.Sc., East West University, 2006,Telecommunications Engineering

Sabiha Rahman Juthy
MS, Royal Institute of Technology, KTH, Stockholm, Sweden, 2007, Information Technology.

Adjunct Faculty

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Ajit Kumar Majumder
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Md. Rafiqul Matin
M.Sc., Bangladesh University of Engineering & Technology, 1991, Electrical & Electronic Engineering

Mohammad Shorif Uddin
D.Engg., Kyoto Institute of Technology, Japan, Information Engineering

Md. Zahedul Hassan
Ph.D., Saga University, Japan, 1998, Material Science

Md. Imdadul Islam
M.Sc., Bangladesh University of Engineering & Technology, 1998, Electrical & Electronic Engineering

Habibur Rahman
Ph.D., Kitami Institute of Technology, Japan, 2006, Power Systems Engineering

Department of Computer Science and Engineering

Department of Computer Science and Engineering at EWU, since its inception, has been offering the undergraduate program in Computer Science. The Department later introduced Computer Science and Engineering with more focus on the ICT industry worldwide. Computer Science and Engineering (CSE) program delivers the fundamental skills needed to become a Computer Engineer. It is the aim of the B.Sc. in Computer Science and Engineering to give the students a wide knowledge of the subject, rather than just an understanding of existing commercial approaches, so that 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 pursue higher degrees in the computing and information technology area.

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

The B.Sc. in CSE is designed to equip graduates with the knowledge and skills required by the ICT industry. Special emphasis is given on systems design and architecture. Students gain industry knowledge throughout their stay in the CSE program. The CSE department has strong inclination towards research and development and every semester students participate as co-authors with faculty members in publication of journal papers of international standard. The CSE department hosts on regular basis seminars and talks on research areas in order to create interest among students and to prepare them for 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 in 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 on 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.

Long Range Goals

- Quality teaching and learning environment
- Industry Academia Collaborations
- Incubation of real-life developments
- Partnership with ICT Leaders around the globe
- Research and developments for the nation building
- ICT for the poverty alleviation

Short Range Goals

- Develop course curricula based on industry requirements
- Deliver course lessons with industry focus
- Nurture creativity and innovations
- Joint research initiatives

Major Developments and Progresses:

- Development of East West University Management Information System to create autonomy of the registration process to broad range of service operations to support ERP
- Development of Virtual Class Room facility for online knowledge dissemination
- Campus wide fiber optic backbone infrastructure with VSAT
- Computer Lab, Digital Lab, Electronics Lab, Physics Lab, Optics Lab, Telecommunication Lab, Interfacing Lab, and VLSI Lab
- Incubation of Software Development Center (SDC), the only member of BASIS from academic community in Bangladesh
- Partnership with Microsoft Bangladesh Ltd in MSDNAA Networks
- Partnership with BASIS in SoftExpo2004, SoftExpo2005
- Hosted 4th International Conference on Computer and Information Technology (ICCIT) 2002
- Hosted 1st National Competition in Informatics Olympiad 2004
- Hosted 1st Microsoft .Net Curriculum 2005 workshop with Microsoft Bangladesh Limited
- Hosted important seminars, tech-talks, workshops on ITES, CMM, SQA, SDLC and other important IT areas
- Ranked within top 10 in Regional ACM ICPC held in BUET and Bombay IIT
- Ranked within top 10 in National Computer Programming Contest
- Ranked within top 10 in AIUB Programming Contest
- Hosted East West University Inter-University Programming Contest 2006

Project for Research and Development:

Imdad-Sitara Khan Foundation Joint Research Center for Advanced System Engineering (JRCASE) project at East West University(EWU) in association with American Association of Bangladeshi Engineers and Architects (AABEA) intends to provide the world class teaching and research facilities to the engineering students, researchers and faculties in Bangladesh. The goal of the project is to establish Centers of Excellence to support education, research and development (R&D) in the area of advanced system engineering, such as VLSI Design, Software Engineering, Computer Networking, Telecommunication, etc.

Principal Strengths of the Department:

- Industry Academia Collaboration initiatives
- Quality teaching
- Industry focused curricula
- Statse of the art laboratories
- Online Journals and reading materials
- High Speed Internet Connectivity

Final Year Project

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

Research for the project work will be carried out during a student's final year of study and

will be based on the identification of appropriate sources and methods. The project individual/group will come up with a report on the project work to be presented before the project assessors on the scheduled project defense date.

The course project draws together knowledge acquired in different areas of the programmes as well as utilizes skills developed during a student's stay in the department.

Selection of Topic and Preparation

In the course of the study, a student needs 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 enables them to gain understanding on the inner facts of the problem that s/he may address in the project work. Research seminars and workshops help student to identify an area of research activity and guide them on the formulation of the problem area.

Working on the Project

In the course of their project work, students should be able to devote enough time to the progress of the work. Students will require frequent discussions with project advisor to prepare the background during the early stage of the project. The department has a dedicated "Project Room" comprising powerful workstations, digital archiving hardware, white board etc in a horse shoe setup to facilitate the culture of the team work.

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 the 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 incorporating ideas acquired during the discussion and 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.

Program Structure

Bachelor of Science (B.Sc.) in Computer Science

Minimum Requirement 130 Credits

1. General Education Requirements	21 Credits
a. Compulsory GEN (3 courses) (ENG101, ENG102, GEN201)	9 credits
b. Optional GEN (2 courses) (GEN 2XX)	6 credits
c. Optional Non-Computer Science from other dept.	6 credits
2. Core Requirements	97 credits
3. Elective Requirements	9 credits
4. Project/Internship	3 credits

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

Minimum Requirement 143 Credits

1. General Education Requirements	21 Credits
a. Compulsory GEN (3 courses) (ENG101, ENG102, GEN201)	9 credits
b. Optional GEN (2 courses) (GEN 2XX)	6 credits
c. Optional Non-Computer Science from other dept.	6 credits
2. Core Requirements	110 credits
3. Elective Requirements	9 credits
4. Project/Internship	3 credits

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

Course	Title	Credit
General Requirements		**15**
Compulsory General Education Courses		**9**
ENG 101	Basic English	3
ENG 102	Composition and Communication skills	3
GEN 201	Bangladesh Studies	3
Optional General Education Courses:		**6**
Choose two 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:		**97**
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**	**4**
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**	**4**
CSE 405	**Computer Networks**	**4**
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

Course	Title	Credit
CSE 430	Compiler Design	3
CSE 435	**Software Quality Assurance**	**3**
CSE 498	Social and Professional Issues in Computing	3
MAT 101	Calculus I	3
MAT 102	Calculus II	3
MAT 104	Co-ordinate Geometry and Vector Analysis	3
MAT 201	Linear Algebra	3
STA 102	Statistics and Probability	3
PHY 101	Physics I	4
PHY 102	Physics II	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
CSE433	Wireless Programming	3
CSE434	Advanced Enterprise Application Design & Development	3
CSE436	**Multimedia Design and Development**	**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:		**6**
(b) Choose Two courses from		
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
BUS XXX		
Internship/Project		3
CSC 499	Internshi p/Project	3

A Class in Progress

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

Minimum Requirement 143 Credits

Course	Title	Credit
General Requirements		**15**
Compulsory General Education Courses		**9**
ENG 101	Basic English	3
ENG 102	Composition and communication skills	3
GEN 201	Bangladesh Studies	3
Optional General Education Courses		**6**
Choose two 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		**110**
CSE 105	Structured Programming	4
CSE 107	Object Oriented Programming	4
EEE 109	Electrical Circuits	4
CSE 205	Discrete Mathematics	3
CSE 207	Data Structure	4
CSE 225	Numerical Methods	4
CSE 245	Algorithms	4
EEE 251	Electronic Devices and Circuits	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	4
CSE352	Introduction to Wireless Systems	3
EEE 380	Digital Electronics	4
CSE 405	Computer Networks	4
CSE 410	Artificial Intelligence	3
CSE 411	Software Engineering	3
CSE 412	Programming with JAVA	4

Course	Title	Credit
CSE 430	Compiler Design	3
CSE 432	Digital Signal Processing	4
CSE 442	Microprocessors and Microcomputers	4
CSE 498	Social and Professional Issues in Computing	3
MAT 101	Calculus I	3
MAT 102	Calculus II	3
MAT 104	Co-ordinate Geometry and Vector Analysis	3
MAT 201	Linears Algebra	3
MAT 301	Mathematics for Engineers	3
STA 102	Statistics and Probability	3
PHY 101	Physics I	4
PHY 102	Physics II	4
Elective Courses		**15**
From Computer Science/Engineering Courses:		**9**
Choose three courses from		
CSE 401	Information System Analysis and Design	3
CSE 409	Systems Programming	3
CSE 413	Automata Theory and Theory of Computations	3
CSE 415	Software Development Project	3
CSE 420	Computer Graphics	3
CSE 422	Simulation and Modeling	3
CSE433	Wireless Programming	3
CSE434	Advanced Enterprise Application Design and Development	3
CSE435	Software Quality Assurance	3
CSE436	Multimedia Design and Development	3
EEE 452	Electrical Technology	3
CSE 438	Digital Image Processing	3
CSE 436	Advanced Computer Architecture	3
CSE 438	Digital Computer Design	3
CSE 444	Fault Tolerant Computing:	3
CSE 452	Distributed Systems and Algorithms	3
CSE 464	Advanced Database 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
EEE 490	VLSI Design	3
CSE 492	Robotics	3

From Non Computer Science/Engineering Courses: 6		
Choose two courses from		
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

Students in the Digital Systems Lab

Faculty Members of the Department of Computer Science and Engineering

Professor

Md. Mozammel Huq Azad Khan
Ph.D. in Computer Science & Engineering
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Associate Professor

Md. Ershadul H. Choudhury
M.Sc. in Computer Engineering
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M.Sc. in Applied Physics & Electronics
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Senior Lecturer

Nawab Yousuf Ali
M.Sc.
(L-vov Polytechnic Institute, L'vov Ukraine, USSR)

Ahsanullah M Dewan
M.Sc. in Information Technology
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Lecturer

Taskeed Jabid
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(East West University, Dhaka)

Md. Anisur Rahman
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Sazia Mahfuz
M.Sc. in Computer Science
(University of Dhaka)

Firoz Anwar
Master of Engineering in Computer Science
(University of New South Wales, Australia)

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MS in Information Technology (MIT)
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Adjunct Faculty

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Ph.D. in Electronic Engineering
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(University of Malaya, Malaysia)

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D.Engg., Kyoto Institute of Technology, Japan,
Information Engineering

Mohammad Jahangir Alam
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Department of Electrical and Electronic Engineering (EEE)

The involvement of electrical and electronic technologies in modern mundane civilization is inextricable. All aspects of this engineering branch play vital roles in ameliorating the quality of living. The electrical and electronic engineering is therefore recognized as one of the most important disciplines of engineering. This is actually an applied science that combines the applications of physics, chemistry and mathematics. Due to the dependency of other fields of science and technology on it, the Electrical and Electronic Engineering education is directed towards the development of solid foundations of the students that will enable them to endeavor almost all the important branches of modern science. Hence the opportunity and aspiration of electrical and electronic engineering is virtually unlimited.

The Department of Electrical and Electronic Engineering (EEE) at East West University is offering B. Sc. in Electrical and Electronic Engineering with an ambition to develop competent personnel in this field. The degree is designed to prepare its graduates to contribute in all important fields of electrical and electronic engineering, namely solid state electronics, telecommunications, computer engineering, control and drives, power system etc. The curriculum involves primarily the study of a number of core courses of electrical and electronic engineering, along with some courses from specialized areas. To ensure a comprehensive grasp on the theories of electrical and electronic engineering, a number of courses on mathematics, physics and chemistry have been included in the curriculum. Today's employers require Electrical and Electronic Engineers to be good team players with excellent communication skills. Increasing the ethical and moral standards of the engineers is also getting higher priority in the industry. Therefore, the curriculum also emphasizes communication skills and social and ethical awareness through English and Humanities courses.

Program Objectives/Highlights of the Program
The principal objectives/highlights of the program are as follows:

- To provide students with solid foundation of Mathematics and Physics.
- To provide understanding of electrical and electronic circuits and system.
- To provied understanding of electromagnetic theory and electronic properties of materials
- To provied understanding of analog and digital signal processing
- To provied understanding of modern communication engineering.
- To provied understanding of electrical machines, drives, power system and control.
- To provied understanding of digital electronics and microprocessor based systems.
- To provied fundamentals of programming and numerical techniques.
- To provied improved communication skill and a better understanding of social and ethical issues.

B.Sc. in Electrical & Electronic Engineering

Minimum Requirement 146 Credits

The credit distribution is given below

A.	General Education Requirement	21 credits
B.	Core Requirement	104 credits
C.	Elective Requirement	18-24 credits
D.	Project/Industrial Training	3 credits
	Total	**146-152 credits**

A. General Education Requirement	
(Any two from the following)	**21 credits**
(i) Compulsory General Education Courses	12 credits
ENG 101 Basic English	3
ENG 102 Composition & Communication Skills	3
GEN 201 Bangladesh Studies	3
BUS 321 Business for Engineering and Technology	3

(ii) Optional General Education Courses	
(any two courses from the following)	**6 credits**
GEN 202 Eastern Culture & Heritage	3
GEN 203 Ecological System & 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 Relations	3
GEN 211 Concepts of Journalism & Media Studies	3
GEN 212 Women in Development	3
GEN 2XX Any Other General Courses	3

(iii) Optional Course from non Engineering Subjects	**3 credits**
Choose one course	

B. Core Courses		**104 credits**
EEE 101	Electrical Circuits I	3+1=4
EEE 102	Electronics Circuits I	3+1=4
CSE 105	Structured Programming	3+1=4
EEE 200	Electrical Services Design	0+1=1
EEE 201	Electrical Circuits II	3+1=4
EEE 202	Electronics Circuits II	3+1=4
EEE 203	Numerical Analysis for Electrical Engineering	3+1=4
EEE 204	Electrical Measurements and Instrumentation	3+1=4
EEE 301	Electrical Machines I	3+0=3
EEE 302	Digital Logic Design	3+1=4
EEE 303	Signals and Systems	3+0=3
EEE 304	Electrical Machines II	3+1=4
EEE 305	Electromagnetic Fields and Waves	3+0=3
EEE 306	Power System Engineering	3+0=3
EEE 307	Telecommunication Engineering I	3+1=4
EEE 308	Electronic Properties of Materials	3+0=3
EEE 309	Digital Signal Processing	3+1=4
EEE 310	Electronics Circuits III	3+0=3
EEE 401	Microprocessor and Interfacing	3+1=4
EEE 402	Introduction to Control Systems	3+1=4
EEE 404	Engineering and Professional Ethics	3+0=3
CHE 101	Introduction to Chemistry	3+1=4
MAT 101	Differential and Integral Calculus	3+0=3
MAT 102	Differential Equations and Special Functions	3+0=3
MAT 104	Co-ordinate Geometry and Vector Analysis	3+0=3
MAT 201	Linear Algebra	3+0=3
MAT 301	Complex Variables and Mathematical Transforms	3+0=3
PHY 101	Physics I (Mechanics, Waves & Thermodynamics)	3+1=4
PHY 102	Physics II (Electricity, Magnetism & Physical Optics)	3+1=4
STA 102	Statistics and Probability	3+0=3

C. Elective Courses **18-24 Credits**

Students have to choose six elective courses (ELTV1-ELTV6) taking three courses from the major group of the students' choice. The remaining three courses have to be taken from at least two other groups.

GROUP A (Electronics)

EEE 403	Semiconductor Devices	3+0=3
EEE 411	Quantum Phenomena in Nanostructures	3+0=3

EEE 412	Theory of Semiconductor Devices	3+0=3
EEE 413	Fundamentals of Nanotechnology	3+0=3
EEE 414	Optoelectronics	3+0=3
EEE 415	Semiconductor Processing and Fabrication	3+0=3
EEE 416	VLSI Circuits & Systems	3+1=4
EEE 418	Analog Integrated Circuits	3+0=3
EEE 419	Biomedical Electronics	3+0=3

GROUP B (Communication Engineering)

EEE 421	RF & Microwave Engineering	3+1=4
EEE 422	Digital Communications	3+1=4
EEE 423	Wireless & Mobile Communications	3+1=4
EEE 424	Fiber Optics	3+1=4
EEE 425	Digital Image Processing	3+0=3
EEE 426	Telecommunication Engineering II	3+0=3

GROUP C (Computer Engineering)

EEE 431	Advanced Logic Design	3+0=3
EEE 432	Microprocessor Based System Design	3+1=4
EEE 433	Computer Networks	3+1=4
CSE 361	Computer Architecture	3+1=4
CSE 435	Multimedia System Design	3+0=3
CSE 450	Data Structure and Algorithm	3+1=4

GROUP D (Power Engineering)

EEE 441	Power Station	3+0=3
EEE 442	Switchgear & Protective Relays	3+1=4
EEE 443	Special Machines	3+0=3
EEE 444	High Voltage Engineering	3+0=3
EEE 445	Renewable Energy	3+0=3
EEE 446	Power Systems Operation & Reliability	3+0=3
EEE 447	Power Electronics	3+1=4

D. Project Work/Industrial Training 3 credits

Choose any ONE course from

EEE 498	Project Work	3+0=3
EEE 499	Industrial Training	3+0=3

Flow-Chart for Courses to be followed during the FOUR YEARS of the Undergraduate Program of EEE (Numbers in parentheses indicate Credits)

SEMESTER	YEAR I	YEAR II	YEAR III	YEAR IV
SEM I	PHY 101 (4)	GEN 201 (3)	ONEC-I (3)	EEE 401 (4)
	MAT 101 (3)	OGEC-I (3)	EEE 200 (1)	EEE 402(4)
	EEE 101 (4)	MAT 102 (3)	EEE 302 (4)	ELTV I (3/4)
		EEE 102 (4)	EEE 303 (3)	
(Total)	(11)	(13)	(11)	(11/12)
SEM II	ENG 101 (3)	MAT 201 (3)	BUS 321 (3)	ELTV II(3/4)
	MAT 104 (3)	EEE 202 (4)	EEE 304 (4)	ELTV III (3/4)
	CHE 101 (4)	EEE 203 (4)	EEE 305 (3)	ELTV IV (3/4)
	EEE 201 (4)	EEE 306 (3)	EEE 4981 (3)	EEE 499 (3)
(Total)	(14)	(11)	(13)	(12-15)
SEM III	ENG 102 (3)	OGEC-II (3)	EEE 307 (4)	EEE 404 (3)
	PHY 102 (4)	MAT 301 (3)	EEE 308 (3)	ELTV V(3/4)
	STA 102 (3)	EEE 204 (4)	EEE309 (4)	ELTV VI (3/4)
	CSE 105 (4)	EEE 301 (3)	EEE 310 (3)	
(Total)	(14)	(13)	(14)	(9-12)

Legends

OGEC : Optional General Education Courses (any two from GEN 202 to GEN 212)

ONEC : Optional Courses from non-Engineering courses

ELTV : Elective Courses

1 EEE 498 (Project Work) is spread over two semesters. Although the registration for EEE 498 will be done in SEM II, the grades for this course will be assigned at the end of SEM III. Grade X (Continuation) will be assigned at the end of SEM II.

The new curriculum will be effective for students who enter the EEE department in Summer 2006 semester or later.

Faculty Members of the Department of Electrical and Electronic Engineering (EEE)

Professor

Anisul Haque
Ph.D. in Electrical & Computer Engineering
(Clarkson University, NY,USA)

Associate Professor

Md. Ishfaqur Raza
Ph.D. in Electrical Engineering
(University of Missouri-Rolla, USA)

Assistant Professor

Mohammad Ghulam Rahman
Ph.D. in Informataion and Communication Engineering
(University of Tokyo, Japan)

Khairul Alam
Ph.D. in Electrical Engineering
(University of California, Riverside, USA)

Senior Lecturer

Kazi Zamir Uddin Ahmad
M.Sc. in Electrical & Electronics Engineering
(Bangladesh University of Engineering and Technology, Dhaka) (On Leave)

Akeed Ahmed Pavel
M.Sc. in Electrical & Electronics Engineering
(Bangladesh University Engineering and Technology, Dhaka) (On Leave)

Afreen Azhari
M.Sc.in EEE
(BUET, Dhaka)

Kazi Atiqur Rahman
M.Sc. In Communication Engineering and Media Technology
(University of Stuttgart, Stuttgart, Germany)

Lecturer

Tahseen Kamal
M.Sc. in Computer Science and Engineering
(East West University, Dhaka)

Adjunct Faculty

A.B.M. Harun-ur Rashid
Ph.D.
(University of Tokyo, Japan)

Department of Pharmacy

Introduction

The global demand of Pharmacy graduates in the academic and research institutions, pharmaceutical industries, hospitals and other health related fields is increasing in rapid pace at both home and abroad. Throughout history Pharmacy has successfully adapted to the changes within the pharmaceutical industry and medicine.

The introduction of biotechnological based pharmaceutical products has added various new dimensions in the continuous advancement field of pharmaceutical sciences.

The biotechnological revolution has presented Pharmacy with a unique challenge and pharmacists must continue to fulfill their existing responsibilities while developing additional roles. Pharmacists are key persons to promote sound scientific judgment and selecting new therapeutic agents for formulary inclusions.

The science of Pharmacy integrates the knowledge of various disciplines such as Chemistry, Human Physiology, Anatomy, Pharmacology, Microbiology, Pharmaceutics, Pharmaceutical Technology, Mathematics, Statistics, Economics, Marketing , Management etc.

Mission and Future Prospect

The rapid expansion in the field of biotechnology products has presented a new set of opportunities for pharmacists so that they develop newer skills and expand their roles in clinical pharmacy services, clinical research, drug distribution and drug information. However to retain the responsibility for dispensing of new therapeutic aspects pharmacists must keep abreast of innovation of all areas of pharmaceutical sciences including the development of new drug delivery systems and expanding contemporary pharmaceutical services to fulfill the unique demands for pharmacists in societies at home and abroad and to cope with the unprecedented development in the field of medical and pharmaceutical sciences. In the pharmacy department of East West University we have developed new approaches to pharmacy education and created an environment for innovative basic and fundamental research.

Direction

The aim for the introduction of the Pharmacy program is to equip the students with proper scientific information and knowledge leading to the innovation, formulation, preparation, quality assurance, distribution and management of drugs. It is also designed to produce the skilled and efficient manpower to manage pharmaceutical companies, retail pharmacy, hospital pharmacy , community pharmacy services and other govt. bodies related to health services and research organizations.

Status

The Bachelor of Pharmacy in the East West University is a four year program divided into 8 semesters (2 semester per year) required to complete 158 credits. The curriculum is designed to ensure that the students are provided with both theoretical and practical knowledge for ensuring successful career as a pharmacist. The University is taking necessary preparations to introduce the evening course in Master of Science in Pharmaceutical management and marketing, Clinical Pharmacy and Pharmaceutical Technology.

Research

Innovative research program in the field of pharmaceutical sciences, in collaboration with the department of Pharmaceutical Technology, University of Dhaka, BIRDEM, ICDDRB is in progress. Correspondence with Alabama University, USA and University of Ulster is going on for joint research program.

The demand for pharmacy graduates continues both within pharmaceutical industries and academic/research institutions nationwide and abroad. Advances in pharmaceutical sciences have been 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 enable the study of the relationship between biological processes and therapeutic agents. Pharmacists investigate the effects and mechanism of reaction 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 8 semesters (2 semesters per year) requiring completion of 158 credits. The program is designed to ensure that students are provided both theoretical and practical knowledge essential for a successful career in the future.

Laboratory

There are 21 laboratory courses and a research project to be carried out by undergraduate students of the Pharmacy Department. 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 both faculty members and students for conducting research.

Admission Requirements

In addition to the minimum general admission criteria for EWU, students should have Physics, Chemistry and Mathematics at HSC or equivalent level and Biology at SSC and or HSC level to be admitted to B. Pharm. program.

The courses offered for the Bachelor of Pharmacy (B.PHARM) degree are listed on the next page.

A Pharmacy Class in Progress

Bachelor of Pharmacy
Curriculum Summary
Minimum Requirement 158 Credits

The credit distribution is given below:	
A. General Education Requirement	18 Credits
B. Core Requirement	140 Credits
C. Pharmaceutical Research/Project (Within 140 Credits)	5 Credits
D. Industrial Training	----
Total	158 Credits

Course	Title	Credit
A. Compulsory General Education Requirement		**18**
PHY 100	Introductory Physics	3
MAT 100	Mathematics	3
ENG 101	Basic English	3
ENG 102	Composition and Communication Skills	3
GEN 201	Bangladesh Studies	3
GEN 207	Industrial Psychology	3
B. Core Requirement		**140**
PHRM 101	Physical Pharmacy I	4
PHRM 102	Cell Biology and Anatomy	3
PHRM 103	Organic Pharmacy I	4
PHRM 201	Human Physiology I	4
PHRM 202	Basic Microbiology	4
PHRM 203	Pharmaceutical Analysis I	4
PHRM 204	Physical Pharmacy II	4
PHRM 205	Inorganic Pharmacy	4
PHRM 206	Biochemistry	4
PHRM 207	Pharmacognosy I	4
PHRM 208	Human Physiology II	4
PHRM 209	Statistics for Pharmaceutical Sciences	3
PHRM 210	Pharmaceutics I	4
PHRM 211	Organic Pharmacy II	3
PHRM 301	Pharmacology I	3
PHRM 302	Medicinal Chemistry I	3
PHRM 303	Pharmacognosy II	3
PHRM 304	Medicinal Chemistry II	4
PHRM 305	Pharmaceutical Microbiology	4
PHRM 306	Pharmacology II	4
PHRM 307	Pharmaceutical Technology I	3
PHRM 308	Pharmaceutics II	4
PHRM 309	Pharmaceutical Analysis II	4
PHRM 310	Toxicology	3
PHRM 311	Clinical & Hospital Pharmacy	3
PHRM 312	Pharmaceutical Analysis III	3
PHRM 401	Pharmaceutical Management & Marketing	3
PHRM 402	Pharmaceutical Technology II	4
PHRM 403	Drug Design and Development	3
PHRM 404	Pharmaceutical Research	5
PHRM 405	Pharmacy Quality Assurance	3
PHRM 406	Biopharmaceutics & Pharmacokinetics	4
PHRM 407	Pharmaceutical Biotechnology	3
PHRM 409	Advanced Pharmaceutical Analysis	4
PHRM 410	Pharmacy Law and Ethics	3
PHRM 411	Cosmetology	4
PHRM 412	Medicinal Chemistry III	3
PHRM 413	Pharmacology III	4
PHRM 414	Pharmaceutical Engineering	3

Faculty Members of the Department of Pharmacy

Professor

Syed Akhter Hossain
Ph.D. in Applied Bio-Chemistry, Food and Nutrition
(University of Nottingham, UK)

Associate Professor

A. Z. M. Ruhul Momen
Ph.D. in Bio-organic and Bio-analytical Chemistry
(Nugata University, Japan)

Assistant Professor

Sufia Islam
Ph.D. in Pharmacology
(University of Dhaka in collaboration with CNAM Paris, France)

Biplob Kumar Das
Ph.D. in Synthetic Organic/Bioorganic Chemistry
(Toyama Medical and Pharmaceutical University, Japan)

Senior Lecturer

Saquiba Yesmine
Master of Pharmacy
(Jahangirnagar University)

Lecturer

Farhana Rizwan
M.Pharm.
(University of Science and Technology Chittagong)

Sukumar Bepary
M.Pharm.
(University of Dhaka)

Atiqul Haque Pathan
Master of Pharmacy
(University of Dhaka)

Abu Taiab Md. Jamaluddin
Master of Pharmacy (University of Dhaka)

Muhammad Asaduzzaman
M. Pharm
(University of Dhaka)

Chandra Shekhar Biswas
M. Pharm
(University of Dhaka)

Rumana Mawla
M. Pharm
(University of Dhaka)

Apurba Sarkar Apu
M. Pharm
(University of Dhaka)

Md. Zakiur Rahman
M. Pharm
(University of Dhaka)

Adjunct Faculty

Bidyut Kanti Datta
Ph.D. in Pharmaceutical Technology
(Jadavpur University, Calcutta)

Tofail Ahmed Chowdhury
Ph.D.
(University of Dhaka)

A B M Faroque
M.Pharm.
(University of Dhaka)

M. Aftab Uddin
Ph.D. (University of Tokyo, Japan)

A S S Rouf
Ph.D. in Laboratory of Organic Pharmaceutical Chemistry (Okayama University, Japan)

Md. Rezaul Islam
M.Pharm. in Clinical Pharmacy
(University of Sains , Malaysia)

Kohinoor Biswas
M.Pharm.
(University of Dhaka)

Undergraduate Studies

Admission

Prospective students should obtain an EWU Admission Form by paying in cash or by sending a bank draft of Taka 600 or US $10 to the Registrar's Office. They 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 at EWU must qualify in the admission test. The date of the test is announced in major daily newspapers. Students are tested on the English Language (structure, vocabulary, comprehension and composition) and Basic Mathematics. Those who want to study Computer Science and Engineering and Electrical and Electronic Engineering/Information and Communications Engineering are required to have competence in HSC-level Mathematics and those intending to study pharmacy are required to have competence in HSC or A level Physics, Chemistry and Mathematics and Biology at SSC and or HSC level, while others are required to have reasonable proficiency in SSC-level 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 and also in the university website.

Admission Requirements

Minimum qualifications for admission to undergraduate programs are as follows:

1. Minimum 2nd division or minimum GPA of 2.50 in both SSC and HSC Examinations.
2. University of London & Cambridge GCE "O" level in four subjects with a total of 8.0 points and "A" Level in two subjects with a minimum GPA of 2.0 (in the scale of A=5, B=4, C=3, D=2 and E=1); or
3. American High School Diploma and
4. Acceptable EWU Admission Test Score.

Admission Test is waived for candidates securing a minimum score of 1100 in the Scholastic Aptitude Test (SAT).

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 600 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 600 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 uses has been called "analytical learning" and it stresses understanding and problem-solving rather than memorizing. In this mode, our responsibility is to provide experiences from which students can construct

an understanding of the subject area. It is student's responsibility to integrate the experiences into their mind, and to use the knowledge gained in different situations.

Lectures and Tutorials

Courses are organized to provide opportunities for students to learn the concepts and skills required in the field. Lectures are perhaps the most visible form of teaching. A course outline for each course is provided by faculty members in the first class of the semester with detail course content along with assessments guideline and text/reference books used for the course. It is important for the student to realize that lecture materials are not intended for memorizing, but for understanding and Emphasizing on learning through interactive participation.

Tutorial classes are held regularly. These involve discussions between students and faculty members in areas that are challenging. Courses include assignments, which can help students learn concepts and skills. Usually, an assignment will include some general topics as well as parts that are designed to challenge the better students.

Courses also include in-course projects, which can create an impact through infusion of skills and concepts to know from real-life problem solving. In most cases, during project work students interact directly in the problem domain and thereby gain experience.

Course Assessment

Different course instructors use 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 respective course. All in-course assessment results are posted on the notice board.

Student Ethics

East West University is committed to maintaining a proper academic environment in its premises. Students are expected, as enlightened members of the society, to be of good moral character. They should observe the general rules of discipline, honesty, punctuality and show respect for the rights of others. 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

a) Cheating at the examination by any method or means.
b) Helping other students to cheat in examinations.
c) Reproducing the work of others as one's own work.
d) Fabrication or the falsification of any information with the intent to deceive.
e) Forgery, alteration, or misuse of university documents, records and identity cards.

B. Social Misconduct

a) Abusive or disorderly conduct.
b) Sexual harassment.
c) Physical assault in any form.
d) Direct and indirect threat of violence.
e) Verbal, mental, and physical harassment.
f) Participation in any activity that may disrupt any function of the university

C. Property Damage

a) Willful damage or destruction of university property.

D. Dangers to Health and Safety

a) Smoking inside university buildings.
b) Possession or use of alcoholic drinks and drugs.
c) Possession of sharp weapons and firearms.

E. Disobedience to Lawful Authority

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

b) Unauthorized entry.

F. Theft

a) Theft or misappropriation of university funds and materials.

b) Possession of stolen university property.

G. Penalties

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

a) Warning in the form of written or verbal notice.

b) Cancellation of the examination and/or an assignment.

c) Expulsion for one or more semesters.

d) 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.

b) Any penalty/punishment imposed on a student will be reflected in his/her Academic Transcripts/documents.

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 must appear in the 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.

Students Clubs

In addition to academic work, opportunities for co-curricular and extra curricular activities abound for students - the objective being to help students to develop all-rounded personalities. The university has a range of students clubs to promote various activities in different areas. These include:

1. Environmental and Social Club
2. Business Club
3. Debating Club
4. Cine and Photography Club
5. MBA Club
6. Computer Club
7. Cultural Club
8. Sports Club
9. Rotaract Club of East West University
10. English Conversation Club
11. The English Poetry and Drama Club
12. Pharmacy Club
13. Natural Science Club
14. Electronics Club
15. Programmers Club
16. Financial Analysis & Research Club
17. Telecommunications Club
18. Creative Marketing Club

Career and Employment

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

The Career Counseling Center works to place students with leading business organizations of

the country who can expand their activities by utilizing fresh minds imbued with modern skills and expertise. As a forerunner among private universities in Bangladesh it is a place that endeavors not only to ensure excellence in education but also to help students find suitable careers. The center organizes job fairs, workshops and seminars on a regular basis for career-seeking individuals, participating companies, and potential employing bodies to facilitate interaction and getting to know each other's needs and priorities. Besides, the largest job portal in Bangladesh, BDJobs.com, has established a linkage with the Career Counseling Center to extend job services to East West University graduates.

Academic Advisory System

To provide an environment of continuous academic advisory support to student who requires it, especially with respect to adapting into the 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 and 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 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 courses offered in the different departments are on-line. An online course page allows the student access to vital information about courses 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 website of the university at www.ewubd.edu . Besides, students are also required to check for make-up and extra classes on-line.

Attendance Requirement

For 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

East West University reservs the right to revise its tuition and other fees. It may increase at the discretion of the university.

The current fee structure is as follows:

1. Admission Fee: (one-time & non refundable) Tk. 11,000.
2. Course Fee: Tk. 2,200 per credit hour for English & Economics courses and Tk. 3,000 for all other courses.
3. Laboratory Fee:Tk. 2,500 per semester for students of Science Faculties and Tk. 1,000 per semester for students of other Faculties. (payable in every semester & is non refundable)
4. Student Activity Fee: Tk. 500 per semester. (payable in every semester & is non refundable)

Total estimated fees for graduation will be as follows:

Name of the Program	BBA	CSC	CSE	ICE	EEE (146 Credits)	EEE (151 Credits)	B.Pharm	Economics	English
Total Credit Charge (General Education Courses)	33,000.00	19,800.00	19,800.00	19,800.00	19,800.00	19,800.00	19,800.00	72,000.00	72,000.00
Total Credit Charge Elective & Major Courses Education Courses)	324,000.00	363,000.00	402,000.00	393,000.00	411,000.00	426,000.00	417,000.00	217,800.00	217,800.00
Admission Fee	11,000.00	11,000.00	11,000.00	11,000.00	11,000.00	11,000.00	11,000.00	11,000.00	11,000.00
Lab & Activities Fee	18,000.00	36,000.00	36,000.00	36,000.00	36,000.00	36,000.00	36,000.00	18,000.00	18,000.00
Total	**386,000.00**	**429,800.00**	**468,800.00**	**459,800.00**	**477,800.00**	**492,800.00**	**483,800.00**	**318,800.00**	**318,800.00**

The university also offers remedial (non-credit) courses in English, for which a fee of Tk 2,500 for each is charged for one semester only. Remedial Courses may be required for students on the basis of their score in the English 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 of Tk. 6,600 for these courses during subsequent registration.

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.

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

Facilities & Amenities

Lab Facilities of East West University

Computer, VSAT, Network and Internet facilities

Information and Communications Services (ICS) supports a total of 533+ computers along with computer related equipment of the all-functional departments/sections of the University.

To support the hands-on-lab practices for different computation intensive courses, EWU has established 7 (seven) Computer Labs equipped with more than 260 computers and printers of various ranges. The operating support systems are Windows, Linux, Solaries, etc. The programming languages and packages support include C/C++, Java, Fortran, Oracle, MatLab, Visual BASIC, SPSS, MS-SQL Server, MySQL, PHP, .NET etc through Information & Communications Services (ICS) section. ICS works directly under the office of the Registrar to facilitate computer lab facilities to the students and to maintain the computer hardware, software, multi-media systems, networking systems of the University along with its VSAT & internet systems. ICS also provides in-house training to employees of the University who lack necessary computing skills.

Electrical & Electronic Engineering (EEE) Laboratory

Electronics Laboratory: The University has a state-of-the-art electronics lab. The lab is equipped with modern equipment for conducting basic, as well as advanced, experiments on Microelectronic and Power Electronic circuits and devices.

Electrical Circuits and Machines Laboratory: The university is in the process of establishing a modern lab for experiments on electrical circuits and electrical machines and drives. The lab provides the students with hands-on experience on fundamental circuit concepts as well as complex circuit theories. This lab is also equipped with renowned Lab-Volt Electro-Mechanical Training Systems which allow experiments on DC machines, transformers, and single and three-phase AC machines.

VLSI Laboratory: The VLSI lab has the full range of Cadence professional EDA tools for digital, analog and mixed signal VLSI design. The lab provides hardware devices for FPGA design. In addition, the lab is being expanded into a full-scale simulation lab giving students the opportunity to simulate devices, circuits and systems using various educational and professional software.

Applied Physics and & Communications Engineering (APCE) Laboratory

APCE Department has the following laboratories

a. Telecommunication Laboratory
b. Network Laboratory
c. Physics Laboratory

Telecommunication Laboratory

The purpose of the Telecommunication Lab is primarily to offer a hands-on experience to students for training and research by providing a practical demonstration and exercise for the theory covered in Telecommunication courses. The Lab enables students to engage in telecom projects such as Analog Communications, Pulse-Coded Modulation, Digital Modulations, BER Calculation, Fiber Optics, CDMA, Transmit and Receiver Antenna, and Microwave Engineering. An important part of the Telecom Lab is the TIMS Technologies. This Lab is used by the students of all the relevant departments of the Faculty of Sciences and Engineering.

Network Laboratory

To provide hands on practices on Computer Networking for the CSE/EEE/APCE Department

students, a Networking Laboratory has been established, which houses several computers, switches, routers, and networking kits. The Lab is also involved in research of applications of Computer and Communications Networks, such as Wireless Ad Hoc Sensor Nets.

Physics Laboratory

The Physics Laboratory is housed with modern instruments for everyday physics experiments. The dark room facility helps students to conduct optical experiments. This Lab is also used by undergraduate students of all the other engineering departments.

Apart from using the above laboratories, the students of APCE department conduct experimental course work in the **Computer Labs, VLSI Lab, Electronics Lab, Digital Systems Lab,** etc. housed in other Engineering Departments.

It is relevant to add that the above-mentioned laboratories are still under expansion.

Digital Lab

The university, besides the computational facility, is equipped with a modern digital laboratory and a state-of-the-art Physics lab. The 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.

Pharmacy Laboratory

EWU is proud to state that Pharmacy laboratory facilities are of the highest standard, up to the mark and may be rated as the best among similar facilities available in all private universities. As EWU is committed to upgrade all Labs as and when needed, the Department follows a policy of constant upgradation of its own labs.

Out of a total of 46 courses in the B.Pharm program, 18 courses have lab requirement. In addition, a research project, which is an integral part of the degree, requires extensive use of laboratories. The laboratories were set up to meet these requirements. In the near future, the department plans to start M.Pharm courses and the current laboratories will also be able to met the lab requirements of the Masters program.

The labs are equipped with instruments like:

1. Tablet dissolution apparatus
2. Tablet disintegration tester
3. High resolution centrifuge
4. Gel electrophoresis apparatus
5. Refractometer
6. Polarimeter
7. Karl Fisher water determination apparatus
8. Rotary evaporator
9. Freeze drier
10. Carbon dioxide incubator
11. Single punch tablet machine; Capsule filling machine
12. UV-Visible spectrophotometer
13. Thermocycler for PCR
14. ELISA
15. High resolution microscope
16. Fundamental chromatographic instruments
17. Necessary equipment for microbiological experiments, pharmaceutics and pharmacology
18. Separate laboratory arrangements are available for both faculty members and students for conducting research.

The EWU Center for Research and Training (EWUCRT)

The primary objective of the center is to create knowledge through academic and applied research and disseminate acquired knowledge through training and publication. CRT operates through a Research Committee comprising of representatives from the Board, Deans and Chairs of the Academic Department. The current Chairperson of the Center is Dr. Rafiqul Huda Chaudhury and the current Executive Director is Dr. A.K Enamul Haque.

CRT publishes the EWU Journal, a bi-annual publication of multi-disciplinary research papers following a rigorous process of strict reviews. CRT also publishes Working Papers, Occasional Papers and Annual Research Abstracts to publicize and record the academic contributions made by the faculty members of EWU.

In addition, CRT works with government and private institutions at national and international levels to facilitate academic exchanges.

In 2006, CRT funded two research projects through a competitive grant. These research projects are a) Students' Mistakes and Errors in English Writing: Implications for Pedagogy by Harunur Rashid Khan and Md. Zahid Akter of the Department of English and b) Multimedia Courseware Development by Syed Akhter Hossain of the Department of Computer Science.

Seminars

- Multimedia Courseware Development - Syed Akhter Hossain, Department of Computer Science, June 6, 2006.
- Students' Mistakes and Errors in English Writing: Implications for Pedagogy - Harunur Rashid Khan and Md. Zahid Akter of the Department of English, June 06, 2006
- Current status of students who had completed or dropped out from undergraduate programs at EWU by Ms. Jahida Gulshan and Mr.Ahmed Taneem Muzaffar of the Department of Economics, August 1, 2006

Software Development Center (SDC)

The mission of the Software Development Center (SDC) is to provide EWU students with real-world experience in designing and developing quality software for offices, banks, institutions and industries. The Software Development Center at EWU is a member of BASIS (Bangladesh Association for Software and Information Services) and incorporates industry expertise for true software innovation. It has the potential to bring in the presence of the WorldWide Web. SDC believes in simplicity and efficiency.

This century has already witnessed a new paradigm of information technology where objects are embedded as living and exciting parts of the worldwide web. SDC intends to integrate object-oriented programming (OOP) concept with the World Wide Web by providing unique software development services along with 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 through prominent academics and industry experts from home and abroad.

East West University Library

Since its inception in 1996, East West University Library has been an integral part of the University and has been designed to meet the information, research, and curriculum needs of its students, faculty and staff members for research and development activities. It is growing impressively with the university and is constantly serving the vibrant community of students and faculty.

To meet the growing demand of the increasing number of users, professionally trained library personnel have taken on the responsibility for taking care of the multifarious contents, including the selection, processing, and organization of materials and the delivery of information, instructions, and loan services.

Resources

The general collection consists of approximately 16,000 volumes, primarily scholarly monographs, periodicals, text books, magazines, newsletters, related reference books, dissertations, pure reference books, reports, CD-ROMs (1,110), audio-cassettes (135 copies), journals (print copy 39 titles), maps (06 rare item), on-line journals (06 databases; 2,573 Journals), statistical publications, as well as current daily newspapers (16) and periodicals. Books and periodicals relate to the fields of Business Studies, Economics, Liberal Arts, Social Sciences, Electrical and Electronics Engineering, Physics, Pharmacy, Computer Science, Mathematics, English Language and Literature, and Bangladesh Studies.

Books are placed in open stacks for the convenience of use and consultation. EWU Library maintains open access shelves to give enough choice to users for selection of desired materials. Users can also go directly to stacks and look for their required materials. Library personnel are ready to assist in locating information, answer on-the-spot queries, guide and provide instruction in the use of the catalogue, databases, resources, indexes, and abstracts, whenever needed.

Physical Facilities

EWU library is situated on approximately 10,500 sq ft of space spread over 3 (three) floors located at the Foundation Building. The Library can accommodate over 250 students at a time in its well-furnished reading rooms. Almost 2,000 users use this library daily and 800 students make transactions per day. On the ground floor there is a large pigeonhole area for temporary storage purposes and can accommodate about 450 bags and other personal belongings at a time.

Library Services

Library Services include, besides general services, Current Awareness Services (CAS), inter-library loan services, access to electronic resources, borrowing facilities, photocopy services, reference and referral services, guiding students how to get desired library materials, providing print copy journals and daily newspapers, news clipping services, searching and browsing publications through the Internet, access to in-house and international databases, i.e. ACM (Association for Computing Machinery) Portal Digital Library, AGORA (Access to Global Online Research in Agriculture), HINARI (Health InterNetwork Access to Research Initiative), JSTOR (Business collections, Language and literature collections), OUP (Oxford University Press), IEEE (Institute of Electrical and Electronics Engineers)

Library Automation

EWU Library is completely automated and uses its own library management software EWULIBMIS, which has been developed by the EWU Software Development Center. The software includes online catalogue and issue/circulation based on barcodes and search as well as other useful features. The most exciting part of the automation is the web component. Students and faculty members use the web module for study and research purposes.

The Library has a website that is designed to provide online reservation by faculty members for a period of 72 hours, and for searching library collections and getting instant bibliographical data of respective library materials. On the website, users will also find a users' guide with all the rules and regulations of using the library,.

Corporate Membership

EWU Library is a corporate Member of the British Council, Dhaka and Sir Archer K. Blood Library (American Information Center), Dhaka. Membership facilities like borrowing, Online Public Access Catalogue (OPAC), photocopying services, reference services, Internet access and access to online Journals are available in the respective premises.

Library Hours

Sunday through **Thursday:** 8:30 am – 10:00 pm (without any break)

Friday: 8.30 am – 5.30 pm (with a break from 1:00- 3:00 pm)

Closed: Saturdays, government holidays and days stipulated on EWU academic calendar.

Other Facilities

Other facilities of the university include:

- Spacious air-conditioned classrooms
- Free e-mail and Internet access
- Medical Center
- Prayer Room
- Cafeteria
- Study Rooms
- Separate Male & Female Common Rooms with indoor game facilities and television.

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 if 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.

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 at the stipulated 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

Students in the Physics Lab

Course Registration

Course 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 advising 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. Tuition and fees are payable in advance.
4. Students cannot drop a course merely by stopping attendance.
5. Students must register for a minimum of 3 (three) courses every semester.
6. The maximum number of courses a student can take in a semester is 5 (five). Six courses for the students of B.Pharm in bi-semester system.

Late Registration

A student who seeks to register after the first day of the semester must have the permission of the respective Dean of Faculty. 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.

Students in the Digital Systems Lab

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:

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
	P** Pass	0.0
	R** Repeat	0.0
	S*** Satisfactory	0.0
	W** Withdrawal	0.0

* Credits for courses with this grade do not apply towards graduation but used for the calculation of the grade point average.

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

*** Credits for courses with these grades required towards graduation but 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 contact their academic advisors as soon as possible 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.

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 courses graded A+, A, A-, B+, B, B-, C+, C, C-, D+, D, and F are used to determine credits attempted.

In case students repeat courses, GPA and CGPA will be calculated on the basis of the grades obtained in 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. Failure 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 Course may be required for students on the basis of their score in the English 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 is not 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 in 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 grade as specified by the instructor. If action is not taken within one week of the 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 respective Dean of Faculty.

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" or below will be allowed to retake the course only once. In these cases, the better of the two grades 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 the usual tuition charges including lab (if applicable) and other fees.

Academic Honesty

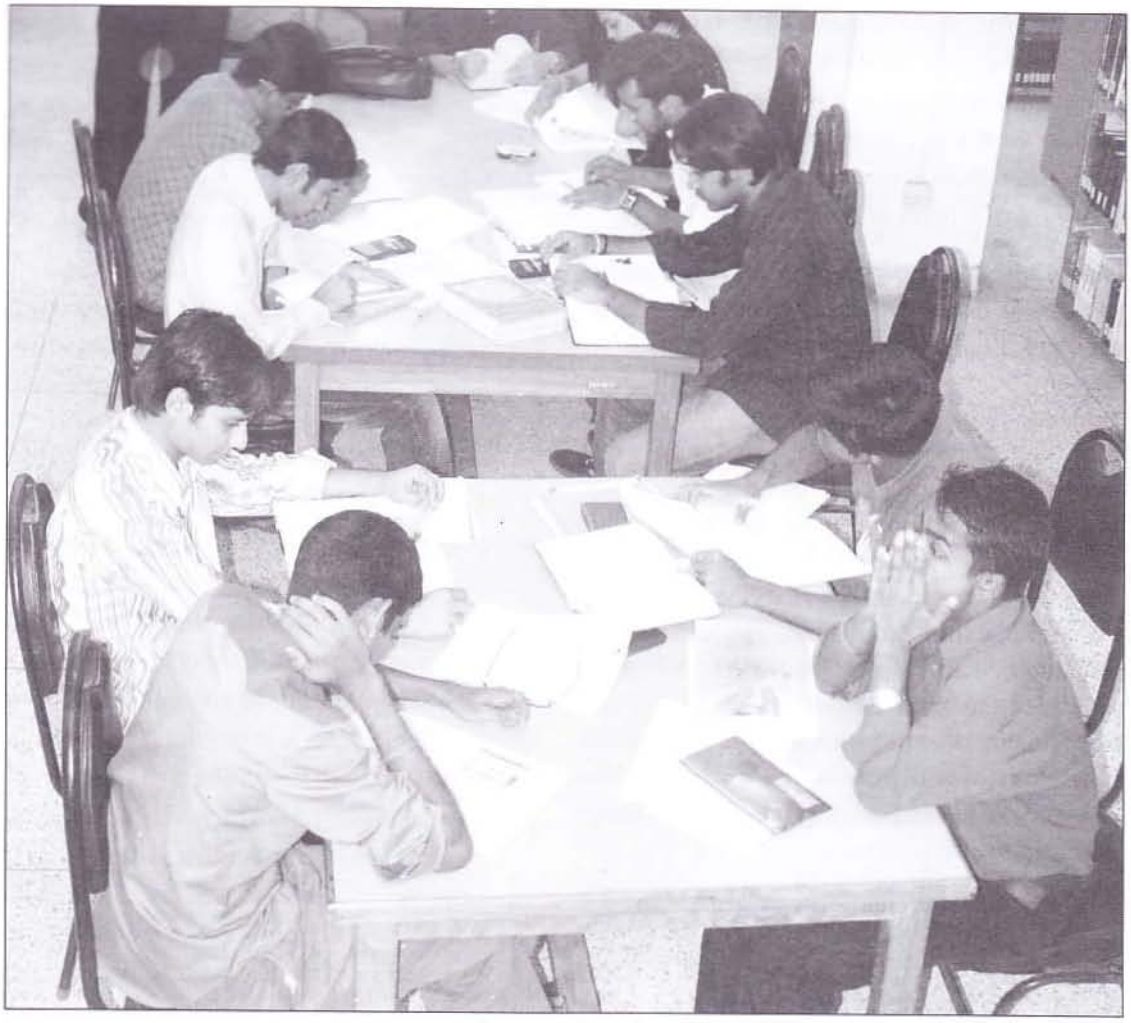
There is a policy of zero tolerance on cheating. Any form of cheating such as copying any document or another person's work, seeking or providing help to other students during tests, or adopting any other form of unfair means during exams, will constitute grounds for disciplinary action. Instructors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

Leave of Absence

Leave of absence may be granted for up to 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 in the following semester, immediate after the leave period. A leave of absence is granted through the Dean of Concerned Faculty. 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 the respective faculty member within 48 hours of the conduct of the examinations on his/her standings. The faculty member may decide to record the grade 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 reason for the absence is found unacceptable, the respective faculty member would follow the university guideline to assess the student's case and act accordingly.



Students in the Library

Scholarships and Financial Aid

Since its inception, East West University has been awarding merit scholarships and need-based financial assistance to deserving students. Every year the university distributes at least 9% of its total earnings among 20% or more of its regular students. Such scholarships/financial assistance are not available to those students who have already spent the normal study time required for the programs for which they are enrolled (e.g. Bachelor's degree program students are not eligible for any scholarship/financial aid beyond the four years that are required to complete the course as a regular student). No student of the university is entitled to benefit from more than one scholarship/financial aid facility at any point of time.

According to the provision of the Private University Act, 1992, private universities are required to provide scholarships to 5 (five) percent of its enrolled poor but meritorious students. Since its inception, the founders of East West University have adopted a policy of not paying any profit or dividend to themselves but to use a good part of its operating surplus towards nurturing merit and providing financial support to those in need. In the last eight years, the scholarship and financial aid policy adopted by East West University has become a source of great encouragement to meritorious but financially constrained students. The academic world has greeted this policy pursued by East West University enthusiastically.

Benefits to students are awarded in the following forms:

1. Merit Scholarships

EWU has generous merit scholarships/financial aid programs. Taka three crore, twenty-five lakhs was awarded to 1,227 students in 2006. Full-year tuition waiver merit scholarships (for a maximum of one-fourth of the total credit requirement of the program for undergraduate students) are awarded to:

(a) Top scorers in the undergraduate admission test with a minimum score of 75% marks: 2 from the Faculty of Business and Economics, and one each from the Faculties of Sciences & Engineering and the Faculty of Liberal Arts and Social Sciences. Top scorers in the graduate admission test with a minimum score of 75% marks: one each in MBA and Telecommunication Engineering. Provided that at least 20 students get admitted in the program.

(b) Students securing GPA of 5.0 in the most recent HSC Examination (excluding 4th subject marks);

(c) Students securing 6 (six) A's in "O" levels and 2 (two) A's in "A" levels;

(d) Top 10% students of each batch of undergraduate programs of each Department who have completed at least one-fourth of the total credit requirement of the program during the immediate past year with a CGPA of 3.97 and above, will get full tuition free Merit Scholarship for equal number of credits to be adjusted in the next three consecutive semesters and those with CGPA of 3.90 to CGPA 3.96 will get half tuition free Merit Scholarship for equal number of credits to be adjusted in the next three consecutive semesters.

Merit Scholarships are extendable, subject to fulfillment of requirement mentioned in (d) above. The Merit Scholarship is discontinued if any student of the undergraduate or graduate program violates the university code of conduct for students and/or if his/her CGPA falls below 3.50.

2. Directors Scholarships

Each of the fifteen Founder Directors of the university, at a point of time, awards two full-tuition scholarships to two students or splits the scholarships into half or quarter tuition waiver/scholarships. This is renewable at the discretion of the Founder Director concerned unless the recipient scholar performs poorly.

3. Financial Aid

(a) General

At the beginning of each semester, the university considers applications on prescribed forms for the granting of financial aid to deserving students on a need-cum-merit basis. Undergraduate applicants who have completed at least one-fourth of the total credit requirement of the program during the immediate past year with a minimum prescribed CGPA of 2.70 and with demonstrated financial need are offered financial assistance to cover part of the tuition fees. The actual amount depends on the number of applicants and the availability of funds. This is by far the largest component of the funding support both in terms of the amount of money as well as the number of recipients. Financial assistance is also extendable on fulfillment of the above requirements.

(b) Family Concession

When two siblings (brother/sister with the same parents) study simultaneously at East West University, the second sibling is entitled to a half-tuition waiver. However, both must be admitted full-time into regular programs. The benefit commences on the date of admission of the second sibling and ceases on the discontinuation of the study of any one of them, after his/her graduation or for any other reason. This benefit may extend up to the third sibling under the above-mentioned conditions. A merit scholarship awardee cannot qualify to get the benefit for siblings or other similar benefits.

Financial Aid is discontinued if any student of undergraduate or graduate program violates the code of conduct and/or if his/her CGPA falls below 2.70. The same is applicable for the beneficiaries of siblings and other similar cases.

4. The Medha Lalon Fund

In order to be able to extend further support towards nurturing merit, particularly to students of middle-class background, to female students, and to students from outside the metropolis, the Board of Directors of East West University set up in 2002 a scheme called the East West University Medha Lalon Fund with an initial endowment of Taka one and a half crore. The Board has also sanctioned an amount of Taka one crore thirty lakhs from the operating surplus of the university for the Fund. This is in addition to the disbursement each year on regular components such as the merit scholarships and financial aid. Several philanthropic persons/organizations have contributed a combined amount of Taka twenty-seven and a half lakh to the Medha Lalon Fund. From the annual earnings of the East West University Medha Lalon Fund deposited in a lucrative five-year interest earning Scholarship Deposit Account of Mercantile Bank, this need-cum-merit based financial aid is awarded.

The following scholarships are currently being offered under the Medha Lalon Fund scheme:

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	Sherifa Chowdhury Scholarship	Tk. 35,000 a year
10	Sherifunnesa 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	Shakina 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.27,000 a year
32.	Dutch Bangla Bank Scholarship	Tk.27,000 a year
33.	Dutch Bangla Bank Scholarship	Tk.27,000 a year
34.	Suraiya Farashuddin Scholarship	Tk.27,000 a year
35.	Suraiya Farashuddin Scholarship	Tk.27,000 a year
36.	Standard Chartered Bank Scholarship	Tk.27,000 a year
37.	Standard Chartered Bank Scholarship	Tk.27,000 a year
38.	Eakub H. Chowdhury Scholarship	Tk.27,000 a year
39.	Eakub H. Chowdhury Scholarship	Tk.27,000 a year
40.	Mercantile Bank Scholarship	Tk.27,000 a year
41.	Mercantile Bank Scholarship	Tk.27,000 a year
42.	East West University Scholarship	Tk.35,000 a year
43.	East West University Scholarship	Tk.35,000 a year
44.	East West University Scholarship	Tk.35,000 a year
45.	East West University Scholarship	Tk.35,000 a year
46	East West University Scholarship	Tk.35,000 a year
47.	East West University Scholarship	Tk.35,000 a year
48.	East West University Scholarship	Tk.35,000 a year
49.	East West University Scholarship	Tk.35,000 a year
50.	East West University Scholarship	Tk.35,000 a year
51.	East West University Scholarship	Tk.35,000 a year
52.	Naushaba-Kalim Sharafi Scholarship	Tk.30,000 a year
53.	Mutual Trust Bank Ltd. Scholarship	Tk.22,000 a year
54.	Mutual Trust Bank Ltd. Scholarship	Tk.22,000 a year
55.	Prime Bank Ltd. Scholarship	Tk.27,000 a year
56.	Prime Bank Ltd. Scholarship	Tk.27,000 a year
57.	Eastern Bank Ltd. Scholarship	Tk.27,000 a year
58.	Eastern Bank Ltd. Scholarship	Tk.27,000 a year

The East West University Medha Lalon Fund is administered by the Financial Aid Committee of the university. For aid, students must apply on a prescribed form. Applications are processed based on information provided by the applicants and according to the criteria set by the university authority, which is subject to change at the discretion of the university. The selection of the scholars and financial aid beneficiaries is done through a computerized system that ensures full transparency.

The university charges a minimum amount (less than one percent) as administration costs from the earnings of the East West University Medha Lalon Fund. It ensures maintenance of regular accounts of the Medha Lalon Fund and has the accounts externally audited every year.

The Financial Aid Committee keeps Medha Lalon Fund donors informed about the operation of the funds on a regular basis. The Committee arranges meetings with the donors to the East West University Medha Lalon Fund to apprise them of the operating procedures, scholarship awards and performance of the scholarship awardees as well as to seek guidance from the donors.

As is evident from the table below, the university policy is rather generous in nurturing merit since an increasing percentage of tuition revenue gets ploughed back and goes to deserving students. It is worth noting that the university, as a matter of policy, encourages enrolment of mofussil and rural students who are also, therefore, beneficiaries of the scholarship and financial aid awards. Furthermore, the university has also been consciously endeavoring to increase the proportion of female students who too benefit from the scholarship & financial aid programs.

The table below shows the number of recipients/beneficiaries of various scholarships and financial aid programs during the last six years:

SL	Name of Scholarship/ Financial Assistance	2001		2002		2003		2004		2005		2006	
		No. of Students	Amount Taka	No. of Students	Amount Taka	No. of Students	Amount Taka	No. of Students	Amount Taka	No. of Students	Amount Taka	No. of Students	Amount Taka
1	Menit Scholarship (Place Holders + Menit Scholarship Awardees)	42	1,882,400	50	2,660,650	82	4,439,500	104	6,056,400	153	8,413,900	192	10,607,285
2	Medha Lalon Fund	-	-	-	-	30	720,600	59	1,324,200	59	1,618,602	68	1,553,548
3	Financial Aid	66	1,551,850	70	1,673,800	127	2,033,900	343	6,604,826	517	9,538,360	681	12,982,400
4	Half-Tuition Family Assistance	47	1,253,200	60	1,543,800	90	2,282,975	133	3,425,475	153	4,042,200	190	5,031,905
5	Director's Quota	4	163,800	16	923,600	22	1,099,400	33	1,363050	52	1,995,525	59	1,802,905
6	Special Assistance	-	-	15	205.100	15	285.800	21	309,350	26	243,450	37	491,140
	Total	**159**	**4,851,205**	**211**	**7,006,950**	**366**	**10,962,225**	693	**19,083,301**	**960**	**25,852,037**	**1,227**	**3,25,00,000**
	Percentage (%) of net Tuition Receipts	5.57%		5.92%		6.75%		8.02%		8.94%		10.08%	
	Percentage (%) of net Student Enrollment	13.25%		11.25%		14.00%		18.03%		23.33%		26.29%	

* Percentage has been calculated excluding Medha Lalon Fund

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, Accounting for merchandising operations, Accounting information systems, Internal control and cash. Accounting for receivables, Inventories, Plant assets, Natural Resources and Intangible assets and accounting for depreciation
Credits: 3 Prerequisite: BUS101

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: ACT101

ACT 311: Taxation
Introduction and definitions of taxes, tax structure of Bangladesh, role of taxation, classification of taxes, introduction of income tax ordinance, 1984, classification of income, residential status, individual assessment, income from salary, income and from securities, income from house property, agricultural income, income from business and profession, capital gain, income from other sources, advance tax, set-off and carry forward of losses, return of income, recovery and refund, penalty and appeal, income tax authority.
Credits: 3 Prerequisite: ACT201

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: ACT201

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: ACT411

ACT 427: Auditing
Surveys the auditing issues common to external and internal auditing. Topics include: auditing theory, evidential matter, principles of internal control, sampling, testing and the application of computerized techniques.
Credits: 3 Prerequisite: ACT421

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, MIS305

ACT 441: Cost Accounting
Use of approaches of cost accounting to enable students to apply costing methods and techniques 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: ACT201

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 IASB). 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: ACT421

ACT 478: Advanced Accounting
A study 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, financial statements of banks, insurance companies and other financial institutions
Credits: 3 Prerequisite: ACT421

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: ENG102

BUS 321: Business for Engineering and Technology
This course should be taught with emphasis on engineering and technological dimensions and practical examples drawn from engineering organizations and practices. Topics to be covered: Business Environment (Types of Business, Entrepreneurship skills, the external environment of business, SWOT and PEST Analysis, Steps in setting up a new business). General Management (Managerial Roles and Skills, Five Basic Functions of Management, Organization Structure, Typical structure of a manufacturing organization, Managerial tools for Decision Making, Leadership, Motivation models, Strategic Planning). Operations Management (Product and Services, Product design and process selection, Facility location and layout, Operation planning and scheduling, quality management, inventory and material management, productivity measurement and improvement). Financial Management (Basic accounting and financial concepts, Introduction to Financial Statements, Financial statement analysis).
Credits: 3 Prerequisite: ENG102

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 a specific topic to an individual student. The student must submit a proposal at least a semester before he/she actually starts working on this project report. Students completing 105 credits may be allowed to enroll in this course with the permission of the chairperson and course instructor.
Credits: 3

BUS 499: Internship
This working experience enables students to apply the principles and practices of business in the local setting. This will provide students with the opportunity to get real life exposure in the contemporary business environment of Bangladesh. 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.
Credits: 3

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, Introduction to C++
Credits: 3+1=4; Prerequisite: none.

CSE 107: Object Oriented Programming
Introduction to Java and JVM, Java and Internet, Java foundation, Control flow, Interface and Polymorphism, Abstract classes and packages, Exception Handling, Applets, Multithreading, Network programming, Graphics, 2D and 3D API. The course includes lab works based on theory taught.
Prerequisite: CSE105
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; Pre-requisite: 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 101

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+1; 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; Pre-requisite: CSE 109.

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, EEE 109, EEE 251.

CSE 352: Introduction to Wireless Systems
Fundamentals of modern wireless systems; Fundamentals of radio propagation and link performance; Cellular concept: interference, base stations and cell sites, handoffs, system capacity; Fading environments: multipath propagation, delay spread, Doppler Spread, statistically fading channel models; Multiple-access schemes: FDMA, TDMA, CDMA, SDMA. Emerging methodologies: phases/adaptive antenna array, multi-array (MIMO) communication systems.
Credits: 3; Prerequisite: MAT102, CSE350

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. The course includes lab works based on theory taught.
Credits: 3+1; Prerequisite: 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 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: 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. The course includes lab works based on theory taught.
Credits: 3+1; 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 microprocessor. 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
Threads and Sockets, JDBC, Serialization and reflection, Client Server programming, RMI and distributed computing, CORBA, Beans, Enterprise Java beans, XML Programming with Java, Java Servlets. The course includes lab works based on theory taught.
Credits: 3+1; Prerequisite: CSE105, CSE107, CSE301

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 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. The course includes lab works based on theory taught.
Credits: 3+1; Prerequisite: MAT 102, MAT 301, EEE 109, CSE 205, EEE 251.

CSE 433: Wireless Programming
Basic concept of telecomm network and wireless programming, The J2ME architecture, CDLC and KVM, The connected and limited devices configuration, Mobile information device profile, MIDP Programming, Low level user interface API, Event handling, Record management system, Network management, Using push registry in J2ME, SMS programming, .Net framework for wireless programming, Bluetooth and IrDA Communication, Programming PDA
Credits: 3; Prerequisite: CSE301, CSE412

CSE 434: Advanced Enterprise Application Design and Development
This module gives an overview of some of the different tiered application architectures (1, 2, 3, N tiers) and some sample designs. The course teaches some of the foundation skills required for building medium to large scale web-based applications, with a B2B e-commerce focus. The course introduces J2EE and Microsoft .NET as two technology architectures for implementing enterprise applications. Java Servlets and Java Server Pages (JSP), Java application servers, integration of data from multiple data sources and distribution of business logic in component-based applications. Multiple application-end delivery formats are considered including web browsers and WAP phones.
Credits: 3; Prerequisite: CSE301, CSE412

CSE 435: Software Quality Assurance
This course will study some of the major areas related to software quality, including: Defining quality, Software quality assurance processes, Software quality standards, Software testing standards, CMMI, PSP, Extreme Programming.
Credits: 3; Prerequisite: CSE301, CSE412

CSE 436: Multimedia Design and Development
Analysis, design and implementation of multimedia software, primarily for e-learning courses or training. Projects emphasize user interface design, content design with storyboards or scripts, creation of graphics, animation, audio and video materials, and software development using high level authoring tools, such as Flash.
Credits: 3; Prerequisite: CSE411, CSE412

CSE 437: 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 255, CSE 360.

CSE 438: 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 439: 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-Programmed control, pipeline and vector processing, computer arithmetic, microcomputer system design: case study.
Credits: 3; Prerequisite: CSE 255, 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: EEE 109, EEE 251 CSE 255, EEE 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 450: Data Structure and Algorithm
Data Types and Data Structures. Analysis Of Algorithms. List, Its Sequential, Linked, Stack and Queue Implementations and Applications. Tree Representations And Traversals. Binary Search Tree, Heaps, AVL Tree And B+ Tree. Searching and Hashing. Methods for Design of Efficient Algorithms: Sequential Method, Divide And Conquer Method, Greedy Method and Dynamic Programming. Sorting Algorithms. Graph Representation, DFS and BFS. Graph Algorithms: Shortest Path Algorithms and Minimum Spanning Trees. String Manipulation Algorithms. Number Theoretic Algorithms. The course includes lab works based on the concepts introduced.
Credits:3+1= 4; Pre-requisites: CSE 105.

CSE 452: Distributed Systems and Algorithms
Formal approaches to distribute 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 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 discriminate 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; Pre-requisites: EEE 251, CSE 255, EEE 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 semester.
Credits 3.

ECO 101: Principles of Microeconomics
Introduction to Economic theory. The concept of scarcity and choice; production possibility frontier; economic systems. theory of demand and supply. Importance of market price. Consumer behavior: Theory of utility. Production: theories related to production; costs of production. Market Structure: Perfect Competition and Monopoly, and an introduction to monopolistic competition and oligopoly markets. Factor market: introduction to the labor market, Rent theory.. Credits 3; Prerequisite: None

ECO 102: Introduction to Macroeconomics
Macroeconomic is the policy oriented part of economics. The course will deal with the concepts and measurement of national income, inflation, unemployment, with an attempt to reveal how macro- economic variables such as national income, unemployment, inflation can be manipulated by government policies. The course will also introduce the macro economic models using a graphical approach: consumption function,

investment theory, equilibrium and disequilibrium models of macro economy - classical and Keynesian theory. The focus of the discussion in the course will be to acquaint students of the macroeconomic fundamentals of an economy.
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 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 I
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 competition.
Credits 3; Prerequisite: ECO 101

ECO 302: Intermediate Macroeconomic Theory II
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.
Credit 3; Prerequisite: ECO 101

ECO 310: Money and Banking
The structure and activity of the financial sector of the economy; role of money in the economy especially its impact on output, employment, and prices; types of financial assets and their uses; interest rates; role played by financial intermediaries; interest-free and new concepts in banking; review of the financial sector of Bangladesh.
Credits 3; Prerequisite: ECO 102, ECO 302

ECO 314: 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. On the taxation side, topics include the question of tax incidence, efficiency effects of taxes and optimal taxation.
Credits 3; Prerequisite: ECO 101

ECO 315: Public Finance
Study of the expenditure and financing activities of the government. Topics include fiscal functions; public sector in the economic accounts; normative theory of government (the level and allocation of government expenditures; taxation; optimum structure of major taxes; fiscal policy and stabilization; development finance); positive theory of government (direct democracy; representative

democracy; bureaucracy; voter behavior; rent seeking); government and markets; efficiency aspects of public enterprises; interest-free public finance. Prerequisite: ECO 101, ECO 301.

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 101 and ECO 102

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
This course is based on the role of public policy in economic development and the political context in which policy decisions are taken. Core topics are the nature of underdevelopment, growth theories, dualism, center periphery models & poverty of LDC countries, the international dimensions of development; macroeconomic stabilization; financial systems; agriculture and the microeconomics of rural organizations; labor markets and human resource development; 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 354: Environmental & Natural Resource Economics II
Resource availability, environmental pollution and limit to growth. Theory of optimal use and depletion of renewable, non-renewable and recyclable resources in the context of water, forest fisheries, and mineral resources. Theory of property rights regimes such as public, private and common property ownership into resource management. Market failure, externality and economics of pollution control. Economics of regional global pollution. Pollution control policies and their implications for efficiency, equity and growth.
Prerequisite: ECO 260 - Credits: 3

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 211

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 382: Economic Valuation of the Environment
The principles of benefit cost analysis, shadow pricing, sustainability constraints, time, risk; techniques for non-market evaluation incorporating contingent valuation, contingent ranking, travel cost method, discrete choice, production function approach behavior, hedonic wage and property price models; modified national income accounting.
Credits 3; Prerequisite: ECO 260.

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 developing economics.
Credits 3; Prerequisite: ECO 301, ECO 302, ECO 328

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: None

ECO 443: Social Mobilization, Rural Banking and Community Organization
This is aimed at analyzing the role of grass root organizations and NGO's in development. Their achievements in activities like microcredit, education and awareness building is discussed. Field trips are an integral part of this course.
Credits 3; Prerequisite: None

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 302.

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 453: Game Theory and Applications
This course deals with the strategic interaction of economic agents. It focuses on economic modeling of strategic choices in a variety of situations such as firms in an oligopolistic industry choosing price or quality, collusive agreements and the incentive to cheat, inflation and unemployment, tariffs and international competition, etc. Topics include zero sum games, variable sum games, solution concepts, Nash equilibrium, pure and mixed strategies, repeated games, dominant strategies, sequential games, sub game perfection, and games with incomplete information. Prerequisite: ECO 101, ECO102, ECO301.

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 227

ECO 467: Intermediate Microeconomic Theory II
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 MAT 211

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 maximum principle, infinite horizon problem, optimal control with constraints
Credits 3; Prerequisite: MAT 211, 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: Intermediate Macroeconomic Theory II
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 & Modigliani's life cycle hypothesis.
Credits 3; Prerequisite: ECO 302, MAT 211.

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: None

ECO 484: Project Analysis and Evaluation
This course deals with project choice, institutional framework, cost-benefit analysis. It also covers measuring the profitability of a project under different goals - framework of project proposal - logical framework analysis - project monitoring with special reference to project proposal system used in Bangladesh. ECO301
Credits 3; Prerequisite: ECO 101, ECO102. Eco 301

ECO 485: Cost Benefit Analysis
Cost Benefit Analysis is the principal tool for project and policy evaluation in the public sector. Given government regulations, cost benefit evaluations are critical for many private sector activities. Real estate developers, manufacturing firms, employers of all types are

required to provide evaluations of environmental impacts and of urban impacts for their proposed projects. They too must engage in cost benefit analysis, in the valuation of social benefits and costs. Government analysts, consultants, and private firms regularly carry out cost benefit analyses for major investments — bridges, roads, transit systems, convention centers, dams — as well as for regulatory activities. Topics include: conceptualization of Costs and Benefits of social projects, identifying costs and benefits, issues related to prices, shadow prices, exchange rate/shadow exchange rate, valuing environmental externalities, cost-effectiveness analysis, risk and sensitivity analysis. Monti-Carlo simulation of risks. Example includes economic valuation of social sector projects like education, transportation, etc. Credits 3; Prerequisite: ECO301, ECO349

ECO 486: Energy Economics and Policy
Dimensions of the energy problems, static and dynamic criteria for efficient energy resource allocation; OPEC countries; environmental issues in energy development; price control; optimum regulation structure; national security dilemma; conservation; future policy directions. Credits 3; Prerequisite: ECO302, ECO 260.

ECO 487: Applied Econometrics
This course discusses the classical linear regression model and its extensions including generalized least squares and the theory and application of F tests. The maximum likelihood principle is introduced, as are alternative approaches to testing, e.g. LR and Wald tests. Additional topics may be included at the instructor's discretion. Covers the fundamental econometric technique of regression analysis and a variety of model specification issues. A central goal is to provide students with the necessary skills and knowledge to use and to correctly interpret the output from econometrics software packages such as TSP, SPSS, SHAZAM, STATA. Credits 3; Prerequisite: ECO 465

ECO 490: Research Methodology
Topics include purpose of scientific research; features and scopes and limitations of research; classification of scientific research; techniques of data collection and selection; various biases in data collection; preparation and presentation of independent seminar. Credits 3

ECO 491: Welfare Economics
Topics include the distinction between normative and positive economics; the first and second fundamental theorem of welfare economics; Hicks-Kaldor-Scitovosky compensation criteria; consumer and product surplus for measuring welfare change; market failure; theory of second best and its implications for policy reforms; importance of property rights and Coase theorem; poverty and distribution of income; relationship between entitlement and welfare; the extent of inequality in Bangladesh. Credits 3; Prerequisite: ECO467.

ECO 492: Law and Economics
Applications of economic theory to problems and issues in both civil and criminal law and the effect of legal rules on the allocation of resources, includes property rights, liability and negligence assignment, the use of administrative and common law to mitigate market failure, and the logic of private versus public law enforcement. Credits 3; Prerequisite: ECO 301

ECO 495: Supervised Research Paper
In this course, each student will write a research monograph on a topic of his/her choice. S/He will be supervised by a faculty. It is expected that in this research s/he will be able to synthesize a research problem. Credits 3; Prerequisite: ECO 490

EEE 101: Electrical Circuits I
DC Circuits: Fundamental electrical concepts and measuring units, D.C. voltage, current, resistance and power. Introduction to circuit theory and Ohm's law, Kirchhoff's current and voltage laws. Simple resistive circuits: Series and parallel circuits, voltage and current division, Wye-Delta transformation. Various techniques for solving circuit problems: loop and node analysis. Network theorems:

Superposition theorem, Source transformation, Thevenin's and Norton's theorems with their applications in circuits having independent and dependent sources; maximum power transfer and reciprocity theorem. Energy storage elements: Inductors and capacitors, series parallel combination of inductors and capacitors. Responses of RL, RC and RLC circuits to natural and step responses. Magnetic Circuits: Magnetic quantities and variables: Flux, permeability and reluctance, magnetic field strength, magnetic potential, flux density, magnetization curve. Laws of magnetic circuits: Ohm's law and Ampere's circuital law. Magnetic circuits: series, parallel and series-parallel circuits. Electrical safety.
The course includes lab work based on theory taught.
Credits: 3+1=4; Pre-requisite: None.

EEE 102: Electronic Circuits I
Ideal diode. p-n junction diode: operating principle, current-voltage characteristics, DC and AC models. Diode circuits: Half and full wave rectifiers, rectifier with capacitor filter, clipping and clamping circuits. Zener diode and zener shunt regulator. Bipolar junction transistor (BJT): structure and physical operation, BJT characteristics, BJT as an amplifier, biasing BJT amplifiers, small signal equivalent circuit models, BJT as a switch. Single-stage mid-band frequency BJT amplifiers with different configurations: voltage and current gain, input and output resistances. Metal-oxide-semiconductor field-effect-transistor (MOSFET): structure and physical operation of enhancement type MOSFETs, current-voltage characteristics, threshold voltage and body effect, biasing MOSFET amplifiers, small signal operation and models, single-stage mid-band frequency MOSFET amplifiers with different configurations.
The course includes lab work based on theory taught.
Credits: 3+1=4; Pre-requisite: EEE 101.

EEE 200: Electrical Services Design
Electrical wiring system design, drafting and estimation. Design for illumination and lighting. Electrical installation system design: substation, air-conditioning, elevator etc. Design for intercom, public addressing system and telephone system. Design for security systems: CCTV, fire alarm, smoke detector, sprinkler system. Issues for designing multistoried buildings.
Credits: 0+1; Pre-requisite: EEE 201.

EEE 201: Electrical Circuits II
Periodic functions: period and frequency. Sinusoidal functions: Instantaneous and effective (r.m.s.) values of current, voltage, power. Complex quantities, phasor representation of sinusoidal quantities. Impedance, real and reactive power, average power and power factor. Single phase ac circuit analysis: Series and parallel RL, RC and RLC circuits, nodal and mesh analysis, application of network theorems in ac circuits, circuits simultaneously excited by sinusoidal sources of several frequencies, transient response of RL and RC circuits with sinusoidal excitation. Resonance in ac circuits: Series and parallel resonance. Magnetically coupled circuits. Analysis of three phase circuits: Three phase supply, balanced and unbalanced circuits, power calculation.
The course includes lab work based on theory taught.
Credits: 3+1=4; Pre-requisite: EEE 101.

EEE 202: Electronic Circuits II
Operational amplifiers (Op-Amp): properties of ideal Op-Amp, inverting, non-inverting and differential amplifiers, integrator and differentiator, weighted summer and other Op-Amp circuits, effects of finite open-loop gain and bandwidth, large signal operation, DC imperfections. Differential and multistage amplifiers: basic operation of differential amplifier, large signal analysis of BJT and MOS differential pairs, basic analysis of multistage amplifiers. Frequency response: amplifier transfer functions, diode and transistor high-frequency small signal models, techniques of determining 3 dB frequencies of amplifier circuits, frequency responses of single-stage, multistage and differential amplifiers. Negative feedback: properties, basic topologies, analysis of feedback amplifiers with different topologies, stability.

The course includes lab works based on theory taught.
Credits: 3+1=4; Pre-requisite: EEE 102.

EEE 203: Numerical Analysis for Electrical Engineering
Numerical solution of algebraic and transcendental equations. Matrices. Interpolation. Curve fitting by least squares. Numerical differentiation and integration. Finite differences. Numerical solution of differential equations.
The course includes lab works based on theory taught.
Credits: 3+1=4; Pre-requisites: EEE 101, CSE 105.

EEE 204: 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; Pre-requisites: EEE 201, EEE 202, for CSE students EEE 251.

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.
The course includes lab works based on theory taught.
Credits: 3+1=4, Pre-requisite: None.

EEE 301: Electrical Machines I
Basics of electromechanical energy conversion: Faraday's law of electromagnetic induction, Fleming's rule and Lenz's law. Elementary generator: electromagnetic force, left hand rule. Ideal transformer - transformation ratio, no-load and load vector diagrams; Actual transformer - construction, equivalent circuit, regulation, short circuit and open circuit tests, parallel operation; Auto transformer. Three phase induction motor: construction, rotating magnetic field, equivalent circuit, vector diagram, torque-speed characteristics, motor torque and developed rotor power, no-load test, blocked rotor test, starting and braking and speed control. Single phase induction motor: principle of operation, equivalent circuit and starting.
Credits: 3; Pre-requisite: EEE 201.

EEE 302: Digital Logic Design
Review of binary number system and codes. Boolean algebra and simplification of Boolean functions. Logic gates. Combinational logic synthesis as AND-OR, OR-AND, NAND-NAND, NOR-NOR, and AND-EXOR circuits. Arithmetic and comparator circuits. Encoders and decoders. Multiplexers and demultiplexers. Flip-flops. Sequential logic synthesis. Registers and counters. Programmable logic devices.
The course includes lab work based on theory taught.
Credits: 3+1=4; Pre-requisite: EEE 102.

EEE 303: Signals and Systems
Continuous-time and discrete-time signals; commonly encountered signals; unit impulse

and unit step functions; sampling and aliasing; continuous-time and discrete-time systems; basic properties. Linear Time-Invariant (LTI) Systems: The convolution sum; the convolution integral; properties; difference and differential equations. Fourier series representation of periodic signals: Continuous and discrete-time periodic signals; properties of continuous and discrete-time Fourier series; Fourier series and LTI systems.

Continuous-Time Fourier Transform: Properties; convolution and multiplication properties. Discrete-Time Fourier Transform: Properties; convolution and multiplication properties. Laplace Transform: Region of convergence; inverse Laplace transform; properties; analysis of LTI systems using the Laplace transform. Z-Transform: Region of convergence; inverse z-transform; properties; analysis of LTI systems using the z-transform.
Credits: 3; Pre-requisites: EEE 201, MAT 301.

EEE 304: Electrical Machines II
DC generator: Operating principle, construction, classification, no-load voltage characteristics, build-up of a self excited shunt generator, critical field resistance, load-voltage characteristic, effect of speed on no-load and load characteristics and voltage regulation. DC motor: Operating principle, classification, torque, back emf, speed, torque-speed characteristics, starting and speed regulation. Synchronous Generator: excitation systems, equivalent circuit, vector diagrams at different loads, factors affecting voltage regulation, synchronous impedance, synchronous impedance method of predicting voltage regulation and its limitations. Parallel operation: necessary conditions, synchronizing, circulating current and vector diagram. Synchronous motor: Operation, effect of loading under different excitation condition, effect of changing excitation, V-curves.
The course includes lab work based on theory taught.
Credits: 3+1=4; Pre-requisite: EEE 301.

EEE 305: Electromagnetic Fields and Waves
Electrostatics:
Review of Vector Analysis; Gauss's theorem and its application, electrostaic potential, Lap lace's and Poisson's equations, method of images, energy of an electrostatic system, conductor and dielectrics. Magnetostatics: Concept of magnetic field, Ampere's Law, Biot-Savart law, vector magnetic potential, energy of magneto static system, mechanical forces and torques in electric and magnetic fields, Curvilinear co-ordinates, rectangular, cylindrical and spherical co-ordinates, solutions to static field problems; Graphical field mapping with applications, solution to Laplace's equations, rectangular, cylindrical and spherical harmonics with applications. Maxwell's equations: Their derivations, continuity of charges, concepts of displacement current. Boundary conditions for time-varying systems. Potentials used with varying charges and currents. Retarded potentials, Maxwell's equations in different coordinate systems. Relation between circuit theory and field theory: Circuit concepts and the derivation from the field equations. High frequency circuit concepts, circuit radiation resistance. Skin effect and circuit impedance. Concept of good and perfect conductors and dielectrics. Current distribution in various types of conductors, depth of penetration, internal impedance, power loss, calculation of inductance and capacitance. Propagation and reflection of electromagnetic waves in unbounded media: Plane wave propagation, polarization, power flow and Polyinting's theorem. Transmission line analogy, reflection from conducting and conducting dielectric boundary; Display lines ion in dielectrics, liquids and solids, plane wave propagation through the ionosphere. Introduction to radiation.
Credits: 3; Pre-requisites: MAT 102, PHY 102.

EEE 306: Power System Engineering
Line representation: Equivalent circuit of short, medium and long transmission line. Network representation: Single line and reactance diagram of power system and per unit representation. Load flow: Gauss-Seidel method. Power flow control: Tap changing transformer, phase shifting, booster and regulating transformer and shunt capacitor. Fault analysis: Short circuit current and reactance of a synchronous machine. Symmetrical fault calculation methods: symmetrical components, sequence networks and unsymmetrical fault calculation. Power system stability: swing equation, equal area criterion, methods of improving transient

stability. Protection: Introduction to relays, differential protection and distance protection. Circuit breakers. Load curves: Demand factor, diversity factor, load duration curves, energy load curve, load factor, capacity factor and plant factor.
Credits: 3; Pre-requisite: EEE 201.

EEE 307: Telecommunication Engineering I
Elements of communication systems, necessity of modulation, system limitations, message source, bandwidth requirements, transmission media types, bandwidth and transmission capacity. Noise: Source, characteristics of various types of noise and signal to noise ratio. Amplitude Modulation and Demodulation: Double side band, single side band, vestigial side band. Spectral analysis of each type, envelope and synchronous detection; angle modulation instantaneous frequency, frequency modulation (FM) and phase modulation (PM), spectral analysis, demodulation of FM and PM. Pulse modulation: Sampling - sampling theorem, Nyquist criterion. Pulse code modulation (PCM) - quantization principle, quantization noise, demodulation of PCM. Frequency and time division multiplexing and their applications. Radio Wave Propagation: Effects of ionosphere and earth's curvature. Introduction to Satellite and Optical Communication. Introduction to telephony: Different types of switching, SPC and digital switching systems, time and space switching.
The course includes lab work based on theory taught.
Credits: 3+1=4; Pre-requisite: EEE 303.

EEE 308: Electronic Properties of Materials
Crystal Structures: Types of crystals, lattice and basis, Bravais lattice and Miller indices. Classical Theory of Electrical and Thermal Conduction: Scattering, mobility and resistivity, temperature dependence of metal resistivity, Mathiessen's rule, Hall effect and thermal conductivity. Introduction to Quantum Mechanics: Wave nature of electrons, Schrödinger's equation, one-dimensional quantum problems - infinite quantum well, potential step and potential barrier; Heisenberg's uncertainty principle and quantum box. Band Theory of Solids: qualitative description energy bands, effective mass, density-of-states. Carrier Statistics: Maxwell-Boltzmann and Fermi-Dirac distributions, Fermi energy. Modern Theory of solids: Determination of Fermi energy and average energy of electrons in metals, energy band diagrams of intrinsic and extrinsic semiconductors, electron and hole concentrations in semiconductors at equilibrium, Dielectric Properties of Materials: Dielectric constant, polarization - electronic, ionic and orientational; internal field, Clausius-Mosotti equation, spontaneous polarization, frequency dependence of dielectric constant, dielectric loss and piezoelectricity. Magnetic Properties of Materials: Magnetic moment, magnetization and relative permittivity, different types of magnetic materials, origin of ferromagnetism and magnetic domains. Superconductivity: Zero resistance and Meissner effect, Type I and Type II superconductors and critical current density.
Credits: 3; Pre-requisites: PHY 102, MAT 301.

EEE 309: Digital Signal Processing
Introduction to Digital Signal Processing (DSP): Discrete-time signals and systems, analog to digital conversion, impulse response, finite impulse response (FIR) and infinite impulse response (IIR) of discrete-time systems, difference equation, convolution, transient and steady state response. Discrete Transformations: Discrete Fourier series, discrete-time Fourier series, discrete Fourier transform (DFT) and properties, fast Fourier transform (FFT), inverse fast Fourier transform. Z-transformation: Properties, transfer function, poles and zeros and inverse Z transform. Correlation: Circular convolution, auto-correlation and cross correlation. Digital Filters: FIR filters - linear phase filters, specifications, design using window, optimal and frequency sampling methods; IIR filters - specifications, design using impulse invariant, bi-linear z-transformation, least-square methods and finite precision effects.
The course includes lab works based on theory taught.
Credits: 3+1=4 Pre-requisite: EEE 303.

EEE 310: Electronic Circuits III
Active filters: different types of filters and specifications, transfer functions, realization of first and second order low, high and band pass

filters using Op-Amps. Signal generator: basic principle of sinusoidal oscillation, Op-Amp RC oscillator, LC and crystal oscillator. Power amplifier: classification of output stages, class A, B and AB output stages. MOSFET switch: circuit structure, static and dynamic operation of a CMOS inverter, basic CMOS logic-gate circuits, noise margin and propagation delay. Junction filed effect transistor (JFET): structure and physical operation, characteristics. Logic operation and brief description of RTL, DTL, TTL and ECL logic families.
Credits: 3; Pre-requisite: EEE 202.

EEE 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; Pre-requisites: EEE 251, CSE 255.

EEE 401: Microprocessors and Interfacing
Different types of microprocessors (8 bits and 16 bits). Instruction sets. Hardware organization. Microprocessor interfacing. Intel 8086 microprocessor: Architecture, addressing modes, instruction sets, assembly language programming, system design and interrupt. Programmable peripheral interface, programmable timer, serial communication interface, programmable interrupt controller, direct memory access, keyboard and display interface: programmable keyboard and display controller. Introduction to micro-controllers.
The course includes lab work based on theory taught.
Credits: 3+1=4; Pre-requisites: EEE 102, CSE 105.

EEE 402: Control Systems
Linear System Models: Transfer function, block diagram and signal flow graph (SFG).
State Variables: SFG to state variables, transfer function to state variable and state variable to transfer function. Feedback Control System: Closed loop systems, parameter sensitivity, transient characteristics of control systems, effect of third pole and zero on the system response and system types and steady state error. Routh stability criterion. Root locus method and frequency response method. Design of Feedback Control System: Controllability and observability, root locus, frequency response and state variable methods. Digital Control Systems: Introduction, sampled data systems, stability analysis in Z-domain. Solving & analysis various problems by using Matlab.
The course includes lab work based on theory taught.
Credits: 3+1=4; Pre-requisite: EEE 303 or ICE 304.

EEE 403: Semiconductor Devices
Brief review of charge carriers in semiconductors. Drift of carriers in electric fields, diffusion of carriers, diffusion process, built-in field, continuity equation and diffusion length. P-N junctions in Equilibrium: contact potential, Fermi level, space charge. Current flow in a P-N Junction: qualitative description, carrier injection, the diode equation, reverse-bias Breakdown, zener Breakdown, avalanche Breakdown. AC condition of p-n junctions: stored charge, reverse recovery transient, diffusion capacitance and junction capacitance. Metal semiconductor junctions: Schottky barrier, rectifying and Ohmic contacts. Bipolar junction transistor: BJT fundamentals, Ebers-Moll equation, capacitance and charging times. Metal-insulator-semiconductor FET: basic operation,

ideal MOS capacitor, flatband voltage, threshold voltage, MOS capacitance-voltage analysis. MOS field-effect transistor: I-V relationship, substrate bias effect, control of threshold voltage, short channel effects, frequency limitations.
Credits: 3; Pre-requisites: EEE 102, EEE 308.

EEE 404: Engineering and Professional Ethics
Definition and scopes of ethics. Different branches of ethics. Social change and emergence of new technologies, History and development of engineering ethics. Study and application of ethics in engineering. Human qualities of an engineer. Obligation of an engineer to the clients and to the society. Interaction among engineers. Ethical expectations: employers and employees, inter-professional relationships, desired characteristics of a professional code, ethical standards, institutionalization of ethical conduct.
Credits: 3; Pre-requisite: None.

EEE 411: Quantum Phenomena in Nano-Structures
Fundamentals of Quantum Mechanics: Concept of effective mass; bra-ket notations of state vectors; Schrödinger Equation; matrix formulation of quantum mechanics. Scattering Theory: Born approximation and partial wave analysis. Approximation Methods: Different types of approximation methods including perturbation theory. Fundamentals of Non-Equilibrium Statistical Mechanics: Scattering and relaxation. Carrier transport: Density of states, tunneling and transmission probabilities; basic principles of tunnel diode, superlattice and quantum dot.
Credits: 3; Pre-requisite: EEE 308.

EEE 412: Theory of Semiconductor Devices
Lattice Vibration: Simple harmonic model, dispersion relation, acoustic and optical phonons. Band Structure: Isotropic and anisotropic crystals, band diagrams and effective masses of different semiconductors and alloys. Scattering theory: Review of classical theory, Fermi-Golden rule, scattering rates of different processes, scattering mechanisms in different semiconductors, mobility. Different Carrier Transport Models: Drift-diffusion theory, ambipolar transport, hydrodynamic model, Boltzmann transport equations, quantum mechanical model, simple applications.
Credits: 3; Pre-requisite: EEE 308.

EEE 413: Fundamentals of Nanotechnology
Introduction: nano-dimension and paradigm, definitions, background and current practice. Basic concepts: brief review of molecules and periodic table, introduction to organic molecules and polymers, electron spin. Carbon nanotubes: formation, bandstructure, structural and electronic properties. Nanofabrication: nanoscale lithography, molecular synthesis, self-assembly, nanocrystal growth. Nanoelectronics: Modification of bandstructure and density-of-states by quantization, ballistic transport, structure, operating principle and characteristics of carbon nanotube transistor, molecular transistor, spin polarized transistor. Nanophotonics: effect of carrier confinement on stimulated emission, light in nanoscale structures, photonic crystals. Quantum computing: basic physics, quantum computing devices, quantum computing algorithms. Other important applications: micro-electro-mechanical systems (MEMS), sensors, biostructures etc.
Credits: 3; Pre-requisite: EEE 308.

EEE 414: Optoelectronics
Properties of light: Particle and wave nature of light, polarization, interference, diffraction and blackbody radiation. Optical Properties of Semiconductors: Direct and indirect band-gap materials, radiative and non-radiative recombination, optical absorption, photo generation of excess carriers, minority carrier life time, luminescence and quantum efficiency in radiation. Light Emitting Diode (LED): Principles, materials for visible and infrared LED, internal and external efficiency, loss mechanism, structure and coupling to optical fibers. Stimulated Emission and Light Amplification: Spontaneous and stimulated emission, Einstein relations, population inversion, absorption of radiation, optical feedback and threshold conditions.

Semiconductor Lasers: Population inversion in degenerate semiconductors, laser cavity, operating wavelength, threshold current density, power output, optical and electrical confinement. Introduction to quantum well lasers. Photo-Detectors: Photoconductors, junction photo-detectors, PIN detectors, avalanche photodiodes and phototransistors. Solar Cells: Solar energy and spectrum, silicon and schottky solar cells. Modulation of light: Phase and amplitude modulation, electro-optic effect, acousto-optic effect and magento-optic devices.
Credits: 3; Pre-requisite: EEE 403.

EEE 415: Semiconductor Processing and Fabrication
Substrate materials: Crystal growth and wafer preparation, epitaxial growth technique, molecular beam epitaxy, chemical vapor phase epitaxy and chemical vapor deposition (CVD). Doping techniques: Diffusion and ion implantation. Growth and deposition of dielectric layers: Thermal oxidation, CVD, plasma CVD, sputtering and silicon-nitride growth. Etching: Wet chemical etching, silicon and GaAs etching, anisotropic etching, selective etching, dry physical etching, ion beam etching, sputtering etching and reactive ion etching. Cleaning: Surface cleaning, organic cleaning and RCA cleaning. Lithography: Photo-reactive materials, pattern generation, pattern transfer and metalization. Discrete device fabrication: Diode, transistor, resistor and capacitor. Integrated circuit fabrication: Isolation - pn junction isolation, mesa isolation and oxide isolation. BJT based microcircuits, p-channel and n-channel MOSFETs, complimentary MOSFETs and silicon on insulator devices. Testing, bonding and packaging.
Credits: 3; Pre-requisite: EEE 403.

EEE 416: VLSI Circuits and Systems
VLSI Technology: Top down design approach, technology trends and design styles.
Review of MOS Transistor Theory: Threshold voltage, body effect, I-V equations and characteristics, latch-up problems. NMOS and CMOS inverter, pass-transistor and transmission gates. CMOS Circuit Characteristics and Performance Estimation: Resistance, capacitance, rise and fall times, delay, gate transistor sizing and power consumption. CMOS Circuit and Logic Design: Layout design rules and physical design of simple logic gates. CMOS Building Blocks: adders, counters, multipliers, memory structure, arithmetic logic unit. Programmable logic arrays. I/O systems. VLSI Testing: objectives and strategies.
The course includes lab works based on the concepts introduced.
Credits: 3+1=4; Pre-requisite: EEE310.

EEE 418: Analog Integrated Circuits
Brief review of BJT and MOS amplifiers. Current mirror: general properties, basic, cascade and active-load current mirrors. Active load: complimentary, depletion and diode-connected active loads for BJT and MOS amplifiers, differential pair with active load. Voltage and current references: supply independent biasing, temperature insensitive biasing, proportional to absolute temperature current generation and constant transconductance biasing. D/A and A/D converters: ideal circuits, quantization noise, performance limitations, different types of converters. Switched capacitor circuits: sampling switches, basic operation and analysis, switched capacitor amplifier, integrator and other switched capacitor circuits.
Credits: 3; Pre-requisite: EEE310.

EEE 419: Biomedical Electronics
The human body; an overview, forms of mammalian cells, bioelectricity; Electro conduction system of the heart; Bio-electric amplifiers; carrier amplifiers; optically coupled amplifiers; current loading type isolation amplifiers; chopper amplifiers; differential chopper amplifiers, Electrocardiograph (ECG) waveform; ECG preamplifiers, defibrillator, blood pressure measurements and electronic manometry pressure transducers, pressure amplifiers, systolic, diastolic and mean director circuits, practical problems in pressure monitoring; Blood flow measurements;

plethysmography, vector cardiography, cardioverter and pacemakers; Measurement of human brain parameters; cerebral angiography, cronical X-ray, brain scans; Tomography and ultra sonogram; Electroencephalography (EEG); electrode, frequency bands, EEG patterns and EEG preamplifiers, ICU/ CCU central monitoring system.
Credits: 3; Pre-requisites: EEE 202, EEE 204.

EEE 421: RF and Microwave Engineering
Transmission lines: Voltage and current in ideal transmission lines, reflection, transmission, standing wave, impedance transformation, Smith chart, impedance matching and lossy transmission lines. Waveguides: general formulation, modes of propagation and losses in parallel plate, rectangular and circular waveguides. Micro strips: Structures and characteristics. Rectangular resonant cavities: Energy storage, losses and Q. Radiation and Antenna: Small current element, radiation resistance, radiation pattern and properties, Hertzian and half wave dipoles. Antennas: Mono pole, horn, rhombic and parabolic reflector, array, and Yagi-Uda antenna.
The course includes lab works based on the concepts introduced.
Credits: 3+1=4; Pre-requisites: EEE 305, EEE 307.

EEE 422: Digital Communications
Introduction to Communication channel - Communication channels, mathematical model and characteristics; Probability and stochastic processes. Source coding: Mathematical models of information, entropy Huffman code and linear predictive coding. Scrambling/descrambling; Multiplexing techniques; Additive white Gaussian noise (AWGN); Detection techniques for baseband digital signals corrupted by AWGN; Eye diagrams and intersymbol interference (ISI); Bit error performance of base band digital signals in presence of AWGN and ISI; Error control coding schemes; Description of M-ary digital modulation systems (PSK, MSK, QAM); Symbol error performances in the presence of AWGN and ISI and co-channel interference (CCI); Power spectral analyses; Bandwidth requirements and timing recovery circuits; Reliability objectives; System gain; Fade margin requirements for a specific system availability; Design guidelines; Transparent and regenerative transponders; Single channel per carrier (SCPC) systems; Frequency division multiple access (FDMA); Time division multiple access (TDMA) systems; Link budget.
The course includes lab works based on the concepts introduced.
Credits: 3+1=4; Pre-requisites: EEE 202, EEE 307.

EEE 423: Wireless and Mobile Communications
Concept, evolution and fundamentals of wireless and mobile communications; analog and digital cellular systems. Cellular Radio System: Frequency reuse, co-channel interference, cell splitting and components. Mobile radio propagation: Propagation characteristics, models for radio propagation, antenna at cell site and mobile antenna. Frequency Management and Channel Assignment: Fundamentals, spectrum utilization, fundamentals of channel assignment, fixed channel assignment, non-fixed channel assignment, traffic and channel assignment. Handoffs and Dropped Calls: Reasons and types, forced handoffs, mobile assisted handoffs and dropped call rate. Diversity Techniques: Concept of diversity branch and signal paths, carrier to noise and carrier to interference ratio performance. Digital cellular systems: Global system for mobile, time division multiple access and code division multiple access; Mobile propagation; Channel modeling; Principles of cellular communications systems; Multiple access techniques; Pan-European digital cellular mobile system (GSM): radio aspects, network aspects; GPRS, HSCSD and EDGE; UMTS/IMT2000: radio aspects, network aspects.
The course includes lab works based on the concepts introduced.
Credits: 3+1=4; Pre-requisites: EEE 202, EEE 307.

EEE 424: Fiber Optics
Theory of Light Propagation: Ray optics theory and mode theory. Optical Fiber: Types and characteristics, transmission characteristics, fiber joints and fiber couplers. Light Sources:

Light emitting diodes and laser diodes. Detectors: PIN photo-detector and avalanche photo-detectors. Receiver Analysis: Direct detection and coherent detection, noise and limitations. Transmission Limitations: Chromatic dispersion, nonlinear refraction, four wave mixing and laser phase noises. Optical Amplifier: Laser and fiber amplifiers, applications and limitations. Multi-Channel Optical System: Frequency division multiplexing, wavelength division multiplexing and co-channel interference.
The course includes lab works based on the concepts introduced.
Credits: 3+1=4; Pre-requisites: EEE 202, EEE 307.

EEE 425: Digital Image Processing
Digital image fundamentals: image digitization, sampling and quantization, image resolution, color perception and processing, image processing: pixel based information, geometric transformation, local processing (edge detection, subpixed location estimation) restoration (degradation, inverse fitting and weiner filtering), binary image processing: thesholding, run length encoding, distance transforms, medical axis transforms, morphological operations, region segmentation and representation: split and mere algorithm, region growing, image filtering- histogram modification, linear and Gaussian filters, contours- digital curves, polyline splitting, Hop- along algorithm, Conic and 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 the concepts introduced.
Credits: 3+1=4; Pre-requisite: EEE 309.

EEE 426: Telecommunication Engineering II
Introduction: principle, evolution, networks, exchange, standards. Switching systems: introduction to analog system, digital systems. Traffic analysis: traffic characterization, grades of service, network blocking probability, queuing. Modern telephony: internet telephony, integrated services digital network, asynchronous transfer and intelligent networks. Fundamentals of satellite communication: orbits and constellations, free-space loss, attenuation and polarization, link budget. Satellite communication systems: INTELSAT, GPS, GEO, MEO, LEO and VSAT. Earth-station technology.
Credits: 3; Pre-requisite: EEE 307.

EEE 431: Advanced Logic Design
Graph-based representation of logic functions – binary and multiple-valued decision diagrams and their use in logic minimization. Logic functions with various properties and equivalence classes of logic functions. Optimization of sequential networks. Delay and asynchronous behavior. Multi-valued input and two-valued output functions. Heuristic optimization of two-level networks. Multi-level logic synthesis. Logic design using modules. Logic design using EXORs. Register transfer logic design. Hardware description language. Logic synthesis with FPGAs.
Credits: 3; Pre-requisite: EEE 302.

EEE 432: Microprocessor Based System Design
Limitations of 16 bit processors. 32 bit microprocessors (Intel 80386/80486, Motorola 68000) internal architecture, addressing modes, instructions, memory and I/O interfaces system design, programming, applications to industrial process control. Embedded processors architecture advanced port, programming, controller design for adjustable speed motor devices.
The course includes lab works based on the concepts introduced.
Credits: 3+1=4; Pre-requisite: EEE 401.

EEE 433: Computer Networks
Introduction: What is the Internet, What is a protocol? The Network Edge, Core, and Access, Networks Physical Media Delay and Loss in Packet-Switched Networks ,Protocol Layers and Their Service Models, Internet Backbones, NAPs and ISPs, a Brief History of Computer Networking and the Internet. The Application Layer: Principles of Application-Layer Protocols, The World Wide Web: HTTP,

File Transfer: FTP, Electronic Mail in the Internet, The Internet's Directory Service: DNS, Socket Programming. The Transport Layer: Transport-Layer Services and Principles, Multiplexing and Demultiplexing Applications, Connectionless Transport: UDP, Principles of Reliable of Data Transfer, TCP case study , Principles of Congestion Control, TCP Congestion Control. The Network Layer: Introduction and Network Service Model, Routing Principles, Hierarchical Routing. IP: The Internet Protocol, routing in the Internet, What is Inside a Router, Mobile networking. The Link Layer and Local Area Networks: The Data Link Layer: Introduction, Services, Error Detection and Correction, Multiple Access Protocols and LANs, LAN Addresses and ARP, Ethernet Hubs, Bridges and Switches, Wireless LANs: IEEE 802.11, PPP: the Point-to-Point Protocol, ATM. Security in Computer Networks: What is Network Security, Principles of Cryptography Authentication, Integrity, Key Distribution and Certification, Firewalls, Attacks and Countermeasures. Protocols: Mechanisms. What protocol mechanisms/techniques are commonly found in networks (particularly Internet) protocols and why are they used? Signaling, randomization, indirection, multiplexing, virtualization, scalability. Introduction to Queuing: M/M/1; closed loop system models; packet versus fluid models; bounding techniques (e.g., Chernoff bound); normal distributions (equivalent bandwidth), network calculus Measurement. Workload models; traffic and topology characterization, analysis (LRD, heavy tails).
The course includes lab works based on the concepts introduced.
Credits: 3+1=4; Pre-requisite: CSE 105.

EEE 434: Computer Architecture
Information representation and transfer, instruction and data access methods, the control unit: hardwired and micro programmed, memory organization, I/O systems, channels, interrupts, DMA, Von Neumann SISD organization, RISC and CISC machines. Pipelined machines, interleaved memory system, caches, Hardware and architectural issues of parallel machines, Array processors, associative processors, multiprocessors, systolic processors, data flow computers and interconnection networks, High level language concept of computer architecture.
The course includes lab works based on the concepts introduced.
Credits: 3+1=4; Pre-requisite: EEE 302.

EEE 441: Power Stations
Estimates of load, load curves, study and analysis of load curves, interpretation of load curves. Determination of actual demand and capacity of various components in a system, plotting the expected load curve of a system. Use of the load curve. Load growth and extrapolation of load curves. Selection of service requirements, its effect on plant design. Cost consideration. Equations of performance for plant equipment and electric service. Selection of units, standby units, large or small units. Number and sizes of units. Plant location. Considerations for site selection for different types of plants. Generation considerations for different types of power plants-big, medium and small, conventional and nuclear. Economic marginal transmission cost. Graphical solution for location of different types of distribution. Rectangular distribution of loads. Economic conductor section. General consideration. The ideal conductor. Effect of any deviation from the ideal cross section. Limits. for size of underground cables. Selection of ideal supply voltage. Plant performance and operation characteristics. Performance characteristics. Efficiency. Heat rate. Incremental rate method. Station performance characteristic. Station incremental rate. Capacity scheduling. Base load and peak load. Load division between steam and hydro stations. Bus systems, Importance of power control. Current limiting reactors. Different types of bus system layout. Forces on buses in case of short circuits. Nuclear power stations. Comparison with conventional generation methods. Chain reactors. Moderators. Classification of reactors. Types of reactors. Special power reactors. Shielding.
Credits: 3; Pre-requisite: EEE 306.

EEE 442: Switchgear and Protective Relays
Circuit breakers; speed of circuit breakers. Relays Voltage rating (high, medium, lower, low) of circuit breakers. Oil circuit breakers. Circuit breaker operating mechanism and control systems. Arc extinction. Recovery voltage. Devices to aid arc extinction in oil. Maintenance of oil circuit breakers, minimum oil circuit breakers. Air circuit breakers, air blast circuit breakers, vacuum circuit breakers, SF6 circuit breakers. Ratings of power circuit breakers and selection of circuit breakers. Testing of circuit breakers. Protective Relays: General requirements. Relay operating principles. Construction of relays. Relay currents and voltages; use of instruments transformer for relays. Problems of high speed relaying of transmission lines. Overcurrent relays. Directional relays. Distance relays. Sequence and negative sequence relays. Balanced current relaying of parallel line. Ground fault relaying. Pilot relaying principles. Carrier pilot relaying. Operating characteristics of different types of relays. Apparatus protection; circuits and relay setting. Generator motor protection; Transformer protection. Bus protection; line protection.
Credits 3; Pre-requisite: EEE 201.

EEE 443: Special Machines
Generalized energy conversion processes, general principles of electromechanical energy conversion, energy storage. Interpretation of generalized machines from field concepts. Linear induction motor, stepper motor, universal motor, electrostatic motor, repulsion motor, permanent magnet motor, shaded pole motor, hysteresis motor, synchronous reluctance and switched reluctance motor, amplidynes and metadynes, Introduction to vector control of induction motors. Introduction to electric traction.
Credits: 3; Pre-requisite: EEE 304.

EEE 444: High Voltage Engineering
High voltage dc: rectifier circuits, voltage multipliers, Van-de-Graff generators, electrostatic generators. High voltage ac: cascaded transformers and Tesla coil. Impulse voltage: shapes, mathematical analysis, single and multi stage impulse generators, tripping and control of impulse generators. Breakdown in gas, liquid and solid dielectrics. High voltage measurements and testing. Over voltage phenomena and insulation co ordination: lightning and switching surges, basic insulation level, surge diverters, arresters, protector tubes and metal oxide varistors.
Credits: 3; Pre-requisite: EEE 306.

EEE 445: Renewable Energy
Importance of renewable energy, sources; Statistics regarding solar radiation and wind speed; Insulation; geographical distribution, atmospheric factors, measurements; Solar cell; principle of operation, spectral response, factors affecting conversion efficiency, I_V characteristics, maximum power output; PV modules and arrays; stationary and tracking; PV systems; stand alone, battery storage, inverter interfaces with grid; Wind turbine generators; types; operational characteristics; cut-in and cut-out speed, control, grid interfacings, AC-DC -AC link.
Credits: 3; Pre-requisite: EEE 102.

EEE 446: Power System Operation and Reliability
Introduction to unit commitment, contingency evaluation and security assessment; Automatic generation control; Reliability concepts; general reliability functions, exponential distribution, mean time to failure, series-parallel systems, Markov's process; Generation model; Load model; Reliability evaluation of a power system; LOLP, LOEP.
Credits: 3; Pre-requisites: MAT 102, EEE 306.

EEE 447: Power Electronics
Power Semiconductor Switches and Triggering Devices: BJT, MOSFET, SCR, IGBT, GTO, TRIAC, UJT and DIAC. Rectifiers: Uncontrolled and controlled single phase and three phase. Regulated Power Supplies: Linear-series and shunt, switching buck, buck boost, boost and Cuk regulators. AC Voltage Controllers: single and three phase. Choppers. DC motor control. Single phase cycloconverter. Inverters: Single phase and three phase voltage and current source. AC motor control. Stepper motor control. Resonance inverters. Pulse width modulation control of static converters.
The course includes lab works based on the concepts introduced.
Credits: 3+1=4; Pre-requisites: EEE 202, EEE 403.

EEE 452: 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.
Credits: 3; Pre-requisite: EEE 109.

ENG 099: Remedial English
Remedial English is intended for students facing difficulties in coping with English as a medium of instruction and interaction. The course incorporates components of the basic language skills: listening, speaking, reading and writing. Besides the language skills, it also deals with grammatical, structural and appropriateness problems, along with other types of common mistakes students make.
Credits: None, Prerequisite: None

ENG 100: Improving Oral Communication Skills (compulsory)
This course is meant to provide extensive practice in oral expression to meet students' needs for oral communication in practical life. The course will focus on both accuracy and fluency and provides practice in functional and situational English. It will train students for seminar presentations, extempore speeches, debates, and facing and taking interviews along with a number of strategies of oral communication skills.
Credits: 3, Prerequisite: None

ENG 101: Basic English
The course seeks to provide training in the four basic skills of English: listening, speaking, reading and writing. It also includes contextual grammar with a learner focus. The grammatical components will be covered in an integrative and holistic way and addressed basically through reading, writing, and speaking, with meaning-focused activities.
Credits: 3, Prerequisite: ENG 099 for students who are required to do ENG 099, (no pre-requisite for English department students, and students who are not required to do ENG 099)

ENG 102: Composition and Communication Skills
The course stresses on developing writing skills. The components of the course are writing reports, essays of different types (mainly expository, argumentative, narrative, and descriptive) formal letters (letters in academic settings, job applications, CVs), summary writing, and writing assignments, term/research papers with bibliography, footnotes and index. It also stresses on correction of spelling, grammar and usage.
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 and phonology, morphology, syntax, semantics, language and society, language change, brain and language etc.
Credits: 3, Prerequisite: None

ENG 154: English Phonetics and Phonology
The aim of this course is to prepare students to speak English with acceptable pronunciation and intonation. It includes the description of English consonant and vowel sounds, phonemic transcription, stress patterns and different functions of intonation.
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, 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 191: Introduction to Literature: Fiction and Non-Fiction Prose

This course introduces students to the major genres of literature such as short and long fiction, and non-fiction prose with a view to introducing students to the forms and styles of these genres of literature. It will cover the following literary texts/pieces :

Non-Fiction Prose:

Desmond Morris: "Altruistic Behaviour"

Virginia Woolf: "Professions for Women"

George Orwell: "Shooting an Elephant"

Short Fiction:

Katherine Mansfield: "The Garden Party"

Hemingway: "Killers"

Novel:

R.K. Narayan: The Guide

ENG 192: Introduction to Literature: Poetry and Drama

This course aims at familiarizing students with two major genres of literature, Poetry and Drama.

It covers different aspects of poetry and drama such as language use in poetry, differences between prose and poetry, poetic diction, figures of speech, sound effects in poetry, different types of drama (tragedy, comedy, tragi-comedy, history, melodrama etc,), elements of drama (dialogue, action, conflict, dramatic irony, plot construction etc).

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"

Drama:

J. M. Synge: The Riders to the Sea

Credits: 3, Prerequisite: None

ENG 200: Advanced Verbal Communication Skills

This course is meant to give students further training in oral communication skills but with special emphasis on appropriate use of language and style, formal and informal style, polite and impolite expressions, tone, intonation, and stress. It will also cover facing and conducting interviews, presenting seminar papers, project proposals, conducting and taking part in formal meetings, talking and negotiating business and official matters.

ENG 201: Theories of Writing

The course familiarizes students with current theories of writing. It offers a perspective on the writing profession's theoretical evolution-process to cohesion to cognition to social construction. Students will be asked to apply the theories learnt to their own practices.

Credits:3; Prerequisite: ENG-309

ENG 205: History of the English Language

The purpose of this course is to introduce students to the major 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 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 209: Political and Social History of England

This course introduces students to the major social and political events of England and also of Europe from the Tudor period to the end of 20th Century and the different literary movements during these periods.

ENG 211: Representations of Women in Literature

I Feminism

Feminism in Beginning Theory by Peter Barry
Woolf, Virginia "Professions for Women"

II Interpreting Texts By Male Authors

Poetry

Milton, John, Paradise Lost (Section on Eve)
Keats, John, "La Belle Dame Sans Merci"
"My Last Duchess", Simone de Beauvoire, The Second Sex (selections)

Short Story

Joyce, James "Araby"

Fairy Tales

"Snow White"

Play

Ibsen, Henrik, A Doll's House

III Interpreting Texts Written By Women

Poetry

Bradstreet, Anne 'Author to her Book'
Plath, Sylvia 'The Disquieting Muses'
Angelou, Maya 'Still I Rise'
Naidu, Sarojini 'Palanquin Bearers', 'An Indian Love Song'
Das, Kamala 'The Old Playhouse', 'The Maggots'/ 'The Descendants'

Play

Churchill, Caryl Vinegar Tom

ENG 213: English Satire

The purpose of this course is to familiarize students with famous Satires in English. Texts include :

a) Dryden	McFlecknoe
b) Swift	Gulliver's Travels
	A Battle of the Books
c) Addison	"Sir Roger at Church"
	Sir Roger at the Assizes"
d) Pope	Epistle to Dr. Arbuthnot
e) Byron	Don Juan, Bk, 1
f) Orwell	Animal Farm

ENG 222: Introduction to Bangla Literature
বাংলা সাহিত্য

উপন্যাস : সৈয়দ ওয়ালীউলাহ : লালসালু।
নাটক : মুনীর চৌধুরী : কবর।
কবিতা : রবীন্দ্রনাথ ঠাকুর : পৃথিবী, সোনার তরী।
নজরুল ইসলাম : মানুষ।
জীবনানন্দ দাশ : মৃত্যুর আগে, আট বছর আগের একদিন।
শামসুর রহমান : ইলেকট্রার গান।
প্রবন্ধ : মোতাহের হোসেন চৌধুরী : সংস্কৃতি কথা।
ছোট গল্প : রবীন্দ্রনাথ ঠাকুর : শাশুড়ি, রবিবার।
প্রভাত কুমার মুখোপাধ্যায় : বিবাহের বিজ্ঞাপন।
প্রেমেন্দ্র মিত্র : বিকৃত ক্ষুধার ফাঁদে।
সুবোধ ঘোষ : জতুগৃহ।
আখতারুজ্জামান ইলিয়াস : উৎসব।

ENG 226: Business and Professional Writing

This course aims at training students to write different types of business letters and professional writings. It will include writing reports, letter of complaints, ordering goods, preparing business contract papers, and advertisements. The course will also include writing project proposals, notice for meetings, minutes of meetings, tenders, inter-office correspondence, notes, memos, etc.

ENG 230: Nineteenth Century Novel

This course includes the major novelists of the time and their representative works.

Prescribed Texts

Emile Bronte	: Wuthering Heights
Jane Austen	: Pride and Prejudice
George Eliot	: Mill on the Floss
Charles Dickens	: Great Expectations
Thomas Hardy	: Tess of the D'Urberilles

Credits: 3, Prerequisite: ENG 191

ENG 235: 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 listening, speaking, reading and writing skills of English.

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

ENG 245: Romantic Poetry

The course includes selections from the Romantic poets; authors 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"

Credit: 3, Prerequisite: ENG 192

ENG 255: Second Language Acquisition (SLA)

The aim of the course is to look at some major areas related to second language acquisition mainly from an applied linguistic perspective. It covers the areas in breadth rather than in depth. By the end of the course, student should have a familiarity with the major theories relating to second language acquisition and some understanding of the complex relationship between theory and practice in language education.

1. Key Issues:
   What is SLA? SLA vs. FLA, Acquisition vs. Learning, Competence vs. Performance, The role of input and formal instruction in SLA.
2. Learner Strategies :
   Social Strategies, Cognitive Strategies, Communicative Strategies.
3. Theories of SLA:
   The Acculturation Model, The Monitor Model, Accommodation Theory.
4. Learners as Individuals:
   Motivation: What sort of motivation is good for L2 learning?
   Aptitude: Are some people better at learning a second language than others?
   Learning strategies: How do learners vary in their approaches to L2 learning?
   Age: Are young L2 learners better than old learners?
   Are other personality traits important to L2 learning?

Recommended Texts:

Cook, Vivian. 1991. Second Language Learning and Language Teaching. London: Arnold.

Ellis, Rod. 1985. Understanding Second Language Acquisition. Oxford: Oxford University Press.

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: As You Like It
Ben Jonson: Volpone
Congrave: The Way of the World
Goldsmith: She Stoops to Conquer

Credits: 3, Prerequisite: ENG 190 + ENG 195

ENG 303: Syllabus and Material Design

The purpose of this course is to introduce students to the different types of syllabus grammatical, structural, notional-functional, and communicative. It introduces some of the fundamental considerations of syllabus design such as needs analysis, setting of goals, defining objectives, deciding about pedagogic

approaches, selecting, grading and sequencing of items, and recommending testing procedures.
The course 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 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 and generative grammar and London school.
Credits: 3, Prerequisite: ENG 145 + ENG 154

ENG 306: Methodology of Language Teaching
The aim of this course is to prepare students to become good language teachers by familiarizing them with theoretical and practical aspects of language teaching. The course emphasizes on methodology in language teaching. It critically examines Audiolingual Method, Communicative Method, The Natural Approach, Total Physical Response and Suggestopedia.
Credits: 3, Prerequisite: ENG 145

ENG 307: Academic Writing
This course is designed to help and guide students to write well-developed academic papers, following the processes and conventions of the academia. Practice of critical reading and critical thinking will be emphasized. Students will learn how to write a good academic paper with a good introduction and conclusion through the process of paraphrasing, incorporating and synthesizing ideas, and selecting and using quotations from various primary and secondary sources of their readings. Building self-confidence as an original thinker and avoiding plagiarism will be also a component of the course. The course will also acquaint students with current APA and MLA citation practices.
Credits: 3; Pre-requisite: ENG 155 +ENG 309

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 relationships between elements of texts, identifying author's attitude and feelings, mood and tone, recognizing bias, 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 the reading 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, Richard II
Hamlet
Midsummer Night's Dream
Tempest
Five Selected Sonnets
Credits: 3, Prerequisite: ENG 301 + at least 8 other courses

ENG 313: English for the Media
This course seeks to expose students to journalistic writings, interviews and advertising. It will focus on both objective and subjective reporting, conducting interviews, and concepts in advertising. The course will strike a balance between theory and practice,

and enable students to use their critical faculty to rationally (de) construct the language of the media. Students taking the course will be expected to demonstrate their ability to analyze and produce reports, carry out interviews and invent cretive advertisements.
Credits: 3, Prerequisite: ENG 102

ENG 315: 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: Selections from Songs of Innocence and Songs of Experience
Credits: 3, Prerequisite: ENG 192

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 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 necessary knowledge underpinning the translation as a skill.
Credits: 3, Prerequisite: ENG 155 + ENG 309 + at least 5 literature courses

ENG 320: 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 Memoriam"
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 245

ENG 330: English Prose from Bacon to Lamb
This course consists of prose writings from the Elizabethan to the Nineteenth Century. It includes selected writings of Bacon, Addison and Steele, Swift, Boswell and Lamb
Prescribed Text
Bacon: "Of Studies", " Of Great Place", "Of Truth", "Of Friendship"
Addison and Steele: Selections from The Spectator
Boswell Life of Dr. Johnson
Swift: "A Modest Proposal"
Charles Lamb: Selections from Essays of Elia
Credits: 3, Prerequisite: ENG 190

ENG 340: Eighteenth Century Fiction
Students will focus on the rise of the novel and discuss the major works of prose fiction of the period. The texts to be studied include Robinson Crusoe, Gulliver's Travels, Joseph Andrews, Tom Jones and Rasselas
Credits:3, Prerequisite: ENG 191

ENG 402: 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 texts with particular reference to context, cohesive ties, topic framework, illocution and inference.
Credits: 3, Prerequisite: ENG 145 + ENG 154

ENG 403: 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 405: Creative Writing
This is an introductory course on writing poetry and short fiction. The course will give students an opportunity to explore how poetry and short stories can express ideas and emotions and transform the mundane and commonplace into works of art. Keeping in mind the tensions between aesthetic and communicative values of words and the demands of finding one's voice, students will discover the surprises, challenges and the pleasures that lie hidden behind all creative work of art shaped by language. Students will read some selected models of poetry and short story, but will be encouraged to be creative.
Credits: 3, Prerequisite 155 and 309

ENG 410: Continental Literature
The course aims at familiarizing students with some major writers of Continental Literature. It includes works of Flaubert, Tolstoy, Brecht, Pirendello, Baudelaire, Garcia Lorca and Rilke.
Credits: 3, Prerequisite: None

ENG 411: Language Acquisition Theories in EFL/ESL Contexts
This course introduces students to the different theories of language acquisition, interlingua, universal linguistics, error analysis theories, and examines their relevance in teaching English in foreign/second language contexts.
Credits:3, Prerequisite: ENG 207

ENG 412: Techniques of Teaching English Language Skills
This course aims at familiarizing students with different techniques of listening, speaking, reading and writing skills to help develop their efficiency in teaching these English language skills. The course will require the students to do practice teaching.
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 some important issues and considerations in language policy and planning. It considers the nature and function of 'official' languages, relationships between languages and identity, and pluralism–assimilation issue. Students will have to study the language policies 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 its problems. 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 the American Peace Core 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 Ann Bradstreet, Jonathan Edwards, Nathaniel Hawthorne, Henry Wadsworth Longfellow, Henry David Thoreau, Henry James, Mark Twain and Whitman.

Prescribed Texts
Melville: Billy Budd
M. Twain: Huckleberry Finn
N. Hotharne: 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 3 other literature courses

ENG 422: Bilingualism and EFL/ESL
This course introduces students to theoretical developments in bilingualism, and their implication for teaching and learning English in Bangladesh.
Credits:3, Prerequisite: ENG 208

ENG 423: Old and Middle English
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 424: 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 426: 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 the 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 the Night,
Mourning 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 culture from the nineteenth century to modern culture 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 encompassed within this category. Texts to be studied will include selections from 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 Project
The purpose of this course is to provide students some practical training in doing ELT research. Students are required to do a mini-research project in any one of the following areas under a teacher's guidance:
Needs analysis
Designing a communicative syllabus.
Evaluating a syllabus
Evaluating materials and designing materials.
Evaluating teaching.
Evaluating tests and designing reading, writing, speaking and listening tests.
Learner's learning style preferences.
Learner's beliefs and expectations.
Credits: 3, Prerequisite: 10 courses in Linguistics and ELT/Applied Linguistics

ENG 438: Literary Criticism
This course introduces students to some of the fundamental ideas of literary criticism. It examines 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 12 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 Froster, M H Abrams, R Barthes, William Wordsworth, Fish, Said, and Kora Kaplan.
Credits: 4, 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, H.D, Marianne Moore, 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
H.D. : Selections from Norton Anthology of Poetry (4th edition)
Marianne Moore: Selections from Norton Anthology of Poetry (4th edition)
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 451: Computer Assisted Language Learning (CALL)
The course will introduce students to the principles underlying the use of computer technology in language teaching and learning, relate these principles to practice, discuss CALL software through the exploration of relevant theories, principles and modes. By the end of the course students will be able to use the CALL software themselves to produce simple CALL programmes.
Credits: 3, Prerequisite: ENG 155+309

ENG 452: Contemporary English Literature
The course will include novels, poems and plays by some prominent writers of the 1950s, 60s and 70s from England. The following authors will be read:
John Fowles, A.S. Byatt, Harold Pinter, Tom Stoppard, Philip Larkin, Ted Hughes, Sylvia Plath and J. G. Farell
Credits: 3, Prerequisite: 5 Literature courses

ENG 455: Comparative Literature
This course includes non-English writers like R K Narayan, V S Naipaul, Arundhuti Roy, Chinua Achebe, Wole Soyinka, Naguib Mahfuz, and Nadine Gordimer.
Credits: 3, Prerequisite: Completion of at least 6 literature courses

ENG 458: Feminist Readings of Literature.
This course examines representations of women in canonical literary works by men and women in the light of major issues raised by current feminist criticism. By the end of the semester students will be able to interpret texts using feminist terminology and judge them from a variety of feminist theoretical frameworks.
Credits: 3, Pre-requisite: 6 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: ACT101,STA101, ECO101

FIN 201: Business Finance
The principal problems of managing the financial operations of an enterprise. Emphasis upon analysis and solution of problems pertaining to policy decisions.
Credits: 3 Prerequisite: FIN101

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: ECO102 FIN201

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: FIN201

FIN 380: Management of Commercial Bank
This course is designed to provide students with tools and techniques to manage commercial banks. The contents of the course include: 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: FIN201

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 difference 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 FIN201

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 include 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: FIN201

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: FIN201 MAT311 STA327

FIN 435: Managerial Finance
Examines in details the investment, financing and dividend policies of a corporation and their inter-relatedness. Topics include discussion of a debt policy, debt about dividend puzzle, interaction between investment and financing decisions and market for corporate control.
Credits: 3; Prerequisite: FIN201

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: FIN201

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: FIN425

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: FIN201

GEN 201: Bangladesh Studies
The objective of the course is to get the students acquainted with major thematic areas of national importance in Bangladesh. Taught from an interdisciplinary perspective, this course covers the following topics: origin and historical development of the nation; geographic features, natural resources and environmental issues; major issues relating to culture and society including cultural change, social inequality and urbanization; important themes relating to the functioning of the state include judicial, administrative and legislative systems, public administration and governance; featured issues of economic and social development comprising several topics such as economic trends and planning, poverty

eradication, role of NGOs, donors and the civil society.
Credits: 3; Prerequisite: ENG 102

GEN 202: Eastern Culture & Heritage
The objective of this course is to introduce the culture and civilization of eastern part of the world. The specific goal is to make the students familiar with different religions, culture and heritage & intellectual tradition of this region. Major topics include: a brief study of the life of early man; an analytical view about cultural settings of our present and ancient civilizations; various features of Eastern epistemology; an elaborate discussion about various features of culture and heritage of our subcontinent as well as Bangladesh; cultural contact between the East and the West; and contributions of some major scholars of Eastern tradition.
Credits: 3; Prerequisite: None

GEN 203: Ecological System & Environment
The objective of this course is to help students learn basic environmental problems and ecological principles, develop their ability to use these principles to interpret ecological problems and understand the repercussions of environmental mismanagement. Topics include: Environment science, input reduction, population bomb, resources, ecology and population, abundance control, community diversity, economic globalisation of agriculture demography, resource management, biodiversity, pollution, controlling pollution, water pollution, air pollution, ethics.
Credits: 3; Prerequisite: None

GEN 204: Western Thought
The aim of the course is to introduce students with some masterpieces of western literature. The course includes selections from William Shakespeare, Charles Dickens, Anthon Chekov, Guy de Maupassant, Robert Frost, T.S. Elliot.
Credits: 3; Prerequisite: None

GEN 205: Introduction to Psychology
This introductory course on Psychology aims at familiarizing the students of other disciplines with the central concepts and theories of Psychology. It covers both the traditional areas of Psychology and applied topics, including the biological foundations of behavior, sensation, perception, learning, memory, abnormal behavior and treatment and health psychology. The course will not only provide students with a conceptual overview of understanding human behavior and mental processes, but also a pathway to self-understanding, offering the potentials of a future career, and will give them an opportunity for intellectual discovery.
Credits: 3; Prerequisite: ENG102

GEN 206: Introduction to Sociology
The objective of the course is to introduce the students to key sociological concepts, primary social institutions, social structure and stratification, groups, religion and social problems with special reference to Bangladesh. Students will also be familiar with the different methods and techniques of social research. Major topics include: the sociological perspective; culture; socialization; social Institutions; social stratification and social mobility; deviance and social control; sociology of development; research methodology and major social problems of Bangladesh.
Credits: 3; Prerequisite: None

GEN 207: Industrial Psychology
Industrial Psychology (I/O Psychology) is the applied field in which the principles of psychology are used to provide insights into how organizations function, and why they do what they do. This course is based on the science of peoples' behavior at work and the application of psychological principles of organizational and work settings. The purpose of I/O Psychology is to provide how it will directly influence ones lives as job applicants, trainees, employees, managers, coordinators, and consumers, in brief, the nature of work in modern society. It is going to make students familiar with Job Analysis, Performance Appraisal, Assessment Methods for Selection and Placement, Selecting Employees, Training and Development, Theories of Employee Motivation, Job Satisfaction and Organizational Commitment, Productive and Counter Productive Behavior, Working Conditions, Employee Health and Safety from behavioral perspective.
Credits: 3; Prerequisite: ENG102

GEN 208: Introduction to Philosophy
This course is designed to familiarize students with some fundamental problems and issues in philosophy. As a course in a second or higher order discipline concerned with critical thinking, this can help us improve our ways of making sense of the world. This would provide an opportunity for cultivating the skills of evaluating arguments and developing the habits of cooperative rather than adversarial argumentation for problem solving and effective deliberation. The topics to be discussed include: Definition, Nature and Scope of Philosophy; Thinking as the way we make sense of the world; Problem Solving as Thinking Critically; Theories of Reality; Knowledge; Values; Theories of Truth; Environmental Philosophy, Business Philosophy, Philosophy of Globalization Existentialism, Pragmatism and Logical Positivism as philosophical trends.
Credits: 3; Prerequisite: None

GEN 209: Social Psychology
Social Psychology mainly focuses on understanding how and why individuals think and feel as they do in social situations. It seeks to understand the cause of social behavior and thought or identifying factors that shape our feelings, behavior and thoughts in social situations. This course is intended to make students sentient of the application of the information of social factors or social behavior in the field of their interest. Students will be familiar with and understanding of social perception, cognition, attitudes, social identity, prejudice and discrimination, interpersonal attraction and relationship, social influence, prosocial behavior, aggression, and groups and individuals.
Credits: 3; Prerequisite: ENG102

GEN 210: International Relations
The study of International Relations attempts to analyze world events and speculate future in a systematic way. The basic objective of this course is to understand the world that is fast changing. Towards this end, this course intends to equip students with knowledge and analytical tools necessary to comprehend, evaluate, and respond to an increasingly complex array of problems both at the national and international levels. The course focuses on such key areas as Theories of International Relations, Concept of Power, War and Peace, Diplomacy, United Nations, Regional Organizations, Nuclear Arms Race, Inter-State Conflict and Cooperation, International Terrorism and Counter Terrorism, Third World Poverty, International Development, and Globalization.
Credits: 3; Prerequisite: ENG 102

GEN 211: Concepts of Journalism & Media Studies
The broad objective of the course is to examine the basic tenets of newspaper journalism in one hand and media studies in the other. Journalism: The specific objective of the course in Journalism is to how research, organize and write stories; understand the internal structures of newspapers; advertising, circulation and readership and editorial policies of the newspapers; different political systems in which media exists, newspaper censorship and laws of libel as well as ethical issues. Media Studies: students will be introduced to the various forms of media including print, radio and television; conceptual learning about operating system of different form of media especially the applications of information technology in TV; news script writing for print and TV media.
Credits: 3; Prerequisite: ENG 102

GEN 212: Women in Development
The course focuses on conceptual overview and practical tools for understanding the role of women in development process. It discusses the interrelationship between various development issues and gender. The course helps students to become aware of gender issues in both theoretical and Bangladeshi; contexts. It also attempts to help students to contribute to the efforts to eliminate all forms of gender discrimination in Bangladesh society. The course examinees the role of women in economic development. Students are expected to gather knowledge and skill to develop a career plan in the perspective of gender. The course includes feminist analysis of international relations and development theories, women development policy and programme in Bangladesh. Topics include: sex

and gender, patriarchy; men-women relationship in the patriarchal society, Theories of WID, WAD and GAD, gender role, division of labour and gender needs. Women's reproductive health and right, Adolescence health care in relation to gender, Health and nutritional and HIV/AIDS issues in relation with gender, gender and poverty, gender and environment, Violence against women, one stop crisis centre visit/visit to a village, case preparation, CEDAW and its clauses, Constitutional and fundamental rights of women, Beijing platform for action (PFA), anti-dowry laws, and labour laws.
Credits: 3; Prerequisite: ENG101

GEN 213: Introduction to German Language
This course would provide an opportunity of gaining elementary competence in German language. It would enable the course participants to verbally act and react in simple everyday life situation.
Credits 3; Prerequisite: None

GEN 214: Development Studies
The course provides an introductory look at the theories and concepts, which form the foundation of development. Student throughout the course will be facilitated to critically assess contemporary development issues such as poverty, gender discrimination and lack of access to natural resources. Key theoretical concepts such as modernization, liberalism, development projects and human rights will be addressed along with the usefulness of social research.
Credits: 3; Prerequisite: ENG 102

GEN 215: Introduction to French Language
This course will allow the students to develop their basic communication skills in French. Speaking a new language helps one to get to know other people and culture, as language and culture go hand in hand.
Credits 3; Prerequisite: None

GEN 216: Introduction to Spanish Language
This course has been designed to provide understanding of the basic competence in Spanish course. Speaking more than one language is a skill which will increase the marketability of students.
Credits 3; Prerequisite: None

GEN 217: Introduction to Chinese Language
The objective of the course is to familiarize students with the basics of the Chinese language. Employers tend to prefer candidates who speak one or more foreign languages and the fact is that the global economy depends on communication; China plays a vital role in world economy and the Chinese language plays an imperative role in business.
Credits 3; Prerequisite: None

GEN 218: Introduction to Arabic Language
The course focuses on essentials of Arabic Language. The course is designed to express basic capability in it. Interest in the Arabic language has increased greatly throughout the world.
Credits 3; Prerequisite: None

GEN 219: Introduction to Social Anthropology and Ethnology
Social Anthropology is concerned with the description and analysis of people's lives and traditions. Ethnology is the study that deals with the adequate interpretations of such descriptions. This course explores some introductory and basic elements of social anthropology and ethnology, the use of anthropological knowledge, skills, and methodologies to understand several social phenomena and problems, and to develop solutions to those problems.
Credits 3; Prerequisite: None

GEN 220: Principles of Public Relations
The primary objective of this course is to familiarize students with the basic concepts and principles of public relations. At the end of the course, students should have attained knowledge and understanding of the role and functions of public relations in an industrialized society, the basic tools, process and theories of public relations which include research, planning, communication, evaluation and the use of dynamic communication strategies to achieve organizational goals. This course also strives for a better understanding of public relations activities, impression management and how public relations works during crisis situations in personal and organizational arena.
Credits: 3; Prerequisite: ENG 102

GEN 221: Globalization and Social Identity
This course has been designed to provide a comprehensive understanding of basic principles of globalization and social identity from an analytical perspective. The course will aid the student to make analytical conclusions regarding key social issues such as migration, governance, terrorism, globalization and international trade. From a developing nation perspective the course will also shed light on the debate between the Asian and Western Value systems, and thus provide a comprehensive view of people's perceptions of the globalizing world.
Credits: 3; Prerequisite: ENG 102

HRM 301: 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: MGT101

HRM 411: Human Resource Planning
This course introduces the importance of Human Resource Planning in overall human resource management of an organization. Topics include issues in human resource planning; Models and methods of human resource planning; Forecasting future manpower requirements and availability; Assessing human resource goals and gaps; Action plan for bridging the gaps; System approach to annual manpower planning exercise, Econometric models and the use of different trend analysis for human resource forecasting and projections.
Credit:3 Prerequisite: MGT 251, HRM301.

HRM 412: Compensation Management
This course focuses on strategies, procedures and problems in evaluating and rewarding employees. Topics include Performance measurement methods and integration of performance into compensation system; Process of developing a pay level and pay structure for the entire organization; Challenges of designing an effective pay system; Issues in administering an effective pay system; Effect of laws and regulations of pay; Performance measurement and evaluation; Managerial and executive compensation; Practices from comparative perspectives; Current pay issues and controversies.
Credit:3 Prerequisite: MGT 251, HRM301

HRM 414: Industrial Relations
This course deals with maintaining healthy labor relations and building a satisfied labor force for smooth operation of business. Topics include changing labor relations in the national and global context; Evolution of trade union movement and issues; Structure and activities of trade unions; Bargaining power, structure and related issues; Industrial disputes and conflict resolution; Strategies for dealing with unions, Grievance handling procedures; Special issues of woman and child labor, Industrial relations in non-union organizations; Industrial relations and employee productivity; Maintaining organizational stability and disciplining employees behavior; Employee relations programs; Compliance of labor laws; Legal environment and Trade Union movement in Bangladesh.
Credit: 3 Prerequisite: MGT 251, HRM301

HRM 415: Training and Development
This course focuses on developing employee knowledge, skills and attitude, developing competencies for improving productivity and achieving organizational goals. The topics include Human learning and behavior; Training and development function; Training need assessment; Various training methods and strategy for employee development; Designing and implementing training programs; Organization of the training department function; Evaluation of training programs and follow-up; Technical training; Employee development programs; Training and development of employees in long-term perspective.
Credit: 3 Prerequisite: MGT 251, HRM301

HRM 416: Strategic Human Resource Management
This course addresses the strategic role that human resource management plays in creating competitive advantages for firms. Major topics include Strategy formulation and implementation; Role of HRM in supporting the corporate strategies; Impact of workforce

diversity and globalization; Finding the HR fit in the organizational goal setting and mission achievement; HR inputs in the organizational strategic management process; Human Resource Management in the face of rapid technological changes, globalization and rising employee expectations.
Credit: 3 Prerequisite: MGT 251, HRM301

HRM 417: Human Resource Information System
This course focuses on the use of modern computer based information technology in the management of an organization's human resources. The course emphasizes the dependence on information technology in all sphere of management including human resources. This course aims at modernizing and increasing the efficiency of human resources managers through proper use of computer based information system and help them making judicious decisions on human resource planning and utilization.
Credit: 3 Prerequisite: MGT 251, MIS305, HRM301

HRM 418: Job Analysis and Performance Appraisal
This course deals with analyzing job for selecting right people for the organization and evaluating employee performance for rewarding. Course topics include Job analysis and Job evaluation; Job analysis and selection; competency modeling; Measuring employee behavior and performance; Various appraisal methods and systems; Developing and administering an effective performance appraisal system; Linking performance with reward; Motivating employees through rewards; Legal issues in performance appraisal administration; Emerging issues and innovations.
Credit: 3 Prerequisite: MGT 251, HRM301

HRM 419: Leadership, Power and Influence
This course focuses on identifying and understanding the leadership aspects and political manifestations of managerial power and influence. Course topics include Leadership behavior and practices; Management and Leadership; Leadership models and styles; Sources and types of power and influence within organization; Power and influence dynamics; Strategies for gaining Power; Organization as a political entity; Advantages and disadvantages of organizational politics; Political behavior in relation to organizational structure and intensity and manifestations of political behavior.
Credit: 3 Prerequisite: MGT 251, HRM301

HRM 420: Organization Development
This course focuses on the issues of organizational development. Analysis of individual, position, department section and the overall organization to determine the need for development and taking appropriate measures are the core issues of this course. Major emphasis will be given on the human resource development and designing an organization complementary to the human behavior and nature.
Credit: 3 Prerequisite: MGT 251, MIS305, HRM301

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 work based on theory taught.
Credits: 4; Perquisite: 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 316.

ICE 101: Fundamentals of Information & Telecommunications
Basic Digital Electronics: Idea of Number systems; Binary Logic - Basic Boolean operators (AND, OR, NOT); Boolean algebra and logic circuits: De Morgan's Laws; Further Boolean operators (XOR, NAND, NOR); Karnaugh Maps; Flip-Flops.
Introduction to Communication Systems: Digital and Analog sources and systems; Definition of a system; Block diagram of a basic communication system; Basics of the propagation of electromagnetic (EM) waves; Formal definition of information; Channel capacity and ideal communication systems; Basic idea of coding; Different types of signals; Signals and their spectra; Bandwidth of signals; Concept of telephone exchange; Basics of telephone networks; Common types of communication systems.
Credits: 3; Prerequisite: None

ICE 105: Computer Fundamentals & Programming Language
Computer Fundamentals: Evolution of computers, computer codes, computer memory, input-output devices, CPU, operating systems and applications.
Introduction to HTML: Mark up tags for basic document layout: paragraph tags, headings, ordered and unordered lists, definition lists, nested lists Tables: cell alignment Visual effects: logical and visual styles, special characters Hypertext links: directory paths, links to other documents, links inside documents Including multimedia objects: images, sound and video.
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 work based on theory taught.
Credits: 4; Perquisite: None.

ICE 107: Object Oriented Programming
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.
OO Programming in JAVA: Java foundation, control flow, abstract classes and packages, exception handling, applets, web based Java application, multithreading.
The course includes lab work based on theory taught.
Credits: 4; Prerequisite: ICE 105.

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 work based on theory taught.
Credits: 4; Prequisite: 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 work based on theory taught.
Credits: 4; Prerequisite: None.

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 work based on theory taught.
Credits: 4; Prequisite: ICE 211.

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 work based on theory taught.
Credits: 4; Prerequisite: ICE 212.

ICE 301: Database Systems, Software Analysis & Design
Database System Architecture: Three levels of architecture; External level; Conceptual Level; Internal Level; Database Management Systems. Introduction to Relational Databases: Relational Model Overview; Optimization, Relations; Views; Domains; Relations. Specification and Description Language (SDL): Formal descriptive techniques; system specifications, types and instances; state machines; blocks, channels and processes; Backus-Naur Form (BNF) and modified BNF; declarations and block interactions; process creation and termination specification; process and communication addressing; timers; procedures, shorthand; drawing & lexical rules of SDL; supported by a number of simple application examples. Relational Algebra; Syntax; Semantics; Operators; Grouping and ungrouping; Functional Dependencies: Basic definitions; Trivial and new trivial dependencies; Closure of a set of dependencies; Closure of a set of attributes. Normal Forms: - INF, 2NF, 3NF, BCNF Nonlossless decomposition and functional dependencies; First Second and Third Normal Form; Dependency preservation; Boyce code Normal Form. Semantic Modeling: E/R Model; E/R Diagrams; Database design with the E/R model. Object Databases: Objects, classes, methods and messages; Inheritance specialization and generalization; Conceptual Object modeling.
The course includes lab work based on theory taught.
Credits: 4; Prerequisite: ICE 208.

ICE 302: 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 work based on theory taught.
Credits: 4; Perquisite: ICE 105.

ICE 304: Signals & Systems
Review on different types of signals; Linear Time-Invariant Systems: Introduction; Convolution: Impulse Response Representation for LTI Systems; Properties of the Impulse Response Representation for LTI Systems; Differential and Difference Equation Representations for LTI Systems; Block Diagram Representations; State Variable Descriptions for LTI Systems. Fourier Representations for Signals. Application of Fourier analysis in signals. The Laplace Transform; Transform Analysis of Systems; Applications of Laplace Transform. The z-Transform: Introduction; The z-Transform; Properties of the Region of Convergence; Properties of the z-Transform; Inversion of the z-Transform; Transform Analysis of LTI Systems; FIR and IIR filters.
Credits: 3; Perquisite: 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: PHY 102.

ICE 311: Digital Electronics
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 work based on theory taught.
Credits: 4; Perquisite: ICE 214.

ICE 312: Analog Communications
Stochastic Processes: Concept of probability; fundamentals of random variables; statistical averages; Transformation of random variables; mean-squared estimation; limit theorems and convergence; definition of random processes; autocorrelation and cross correlation; Transmission of a random process through a linear filter; Power spectral density functions; white noise; stationary; ergodicity; Gaussian and Poisson processes; Noise; Narrow-band noise; Sine wave plus narrow-band noise.
Continuous Wave Modulation: Introduction, Amplitude modulation; Double sideband-suppressed carrier modulation; Filtering of sidebands; Vestigial sideband modulation; Single sideband modulation; Frequency translation; Frequency-division multiplexing (FDM); Angle modulation; Frequency modulation; Superheterodyne receiver; Noise in CW modulation systems; Noise in linear receivers; Noise in AM receivers; Noise in FM receivers; Phase-locked loop; Nonlinear effects in FM systems; The superheterodyne receiver; Receiver model; Noise in DSB-SC receivers; Noise in SSB receivers; Noise in AM receivers; Noise in FM receivers; Pre-emphasis and de-emphasis in FM.
Pulse Modulation: Sampling process; Pulse-amplitude modulation; Time division multiplexing; Pulse-position modulation; Bandwidth-noise tradeoff; The quantization process; Pulse-code modulation; Noise consideration in PCM systems; Digital multiplexers; Linear prediction; Differential PCM; Delta modulation; Adaptive DPCM.
Credit: 3; Prerequisite: ICE 304

ICE 314: Digital Communications
Baseband Signal Transmission: Power spectral density of different line codes; The matched filter, properties of the matched filter; Error rate due to noise; Intersymbol interference; Nyquist's criterion for distorsionless baseband binary transmission; Correlative level coding; Baseband M-ary PAM transmission; Digital subscriber lines; Optimum linear receiver; Adaptive equalization.
Signal Space Analysis: Geometric representation of signals; Conversion of the continuous AWGN channel into a vector channel; Likelihood functions; Coherent detection of signals in noise; Correlation receiver; Probability of error.
Pass band Signal Transmission: Pass band transmission model; Hierarchy of digital modulation techniques; Coherent binary phase-shift keying (PSK); Coherent binary frequency-shift keying (FSK); Coherent quadriphase-shift keying (QPSK); Coherent minimum phase-shift keying (MSK); No coherent orthogonal modulation; No coherent binary FSK; Differential PSK (DPSK); M-ary PSK; M-ary quadrature amplitude modulation (QAM); Carrier less amplitude/phase (CAP) modulation; M-ary FSK; Power spectra; Bandwidth efficiency; Synchronization; Multichannel modulation; Discrete Multitone (DMT); DFT-based DMT system, applications of DMT; Introduction to OFDM; Spread-spectrum concept.
The Course includes lab work based on theory taught.
Credits: 4; Prerequisite: ICE 312.

ICE 316: 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 work based on theory taught.
Credits: 4; Perquisite: ICE 311.

ICE 319: Numerical & Computational Methods
COMPUTATION: Overview of engineering computation algorithms and methods; Issues in engineering computation; Solution to sets of linear equations; Solution of over-determined equations; Polynomial curve fitting example; Iterative techniques and applications; Finite difference techniques and applications; Numerical integration; Solution of ordinary differential equations; Solution of partial differential equations; Random number generation.
SIMULATION: Numerical mathematics for simulation; Overview of simulation environments; network design and simulation modeling enabling telecommunications system developers to evaluate the performance of existing and proposed networks under different hardware, configurations, or operating constraints. Simulation modeling minimizes risks of unforeseen network bottlenecks, under utilization of overuse of system resources.
The course includes lab work based on theory taught.
Credits: 4; Prerequisite: ICE 312.

ICE 407: Digital Signal Processing
Signal representation using unitary transforms, DFT, DCT, Haar and Walsh Hadamard 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 work based on theory taught.
Credit: 4; Prerequisite: ICE 312.

ICE 408: 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, run length 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: 4; Prerequisite: ICE 312.

ICE 409: Network Programming
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, DNS, RMI, CORBA and Servlets, Fingers, DNS, HTTP, and ping, Clients and Servers, Multiprotocol chat systems and whiteboards.
This course includes lab works based on theory taught.
Credits: 4; Prerequisite: ICE 107, ICE 302.

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 work based on theory taught.
Credits: 4; Prequisite: ICE 314.

ICE 413: 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.
This course includes lab works based on theory taught.
Credits: 4; 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 314.

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 301.

ICE 421: Information Theory & Error Control Coding
Information Theory: Uncertainty, information and entropy; Source coding theorem; Discrete memoryless channels; Mutual information; Channel capacity; Channel coding theorem; Differential entropy and mutual information for continuous ensembles; Information capacity theorem; Rate distortion theory.
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 work based on theory taught.
Credits: 4; Prequisite: ICE 314.

ICE 422: Foundations of TCP/IP
Review of Network Technologies: Wide Area and Local Area Networks, Ethernet, FDDI, ATM, APPANET.
Interworking Concept: Application-Level Interconnection, Network-Level Interconnection, Internet Architecture, and Interconnection through IP routers.
Internet Addressing: Universal Identifier Classified addressing scheme, Network Connections, Network and directed broadcast addresses.
Address Resolution Protocol: Address Resolution Problem, Types of Physical addresses, Direct Mapping, Dynamic Binding, ARP cache.
Reverse Address Resolution Protocol: RARP, Timing RARP Transactions.
IP-Connectionless Datagram Deliver: Virtual Network, Internet Architecture, Connectionless delivery system, Purpose of Internet Protocol.
IP-Routing IP Datagrams: Routing in the Internet, Direct and Indirect Delivery, Table Driven IP routing, Next hop routing.
User Datagram Protocol: UDP, Format of UDP messages, Layering, Pseudo header.
Transmission Control Protocol: Reliable Service, Sliding Window, TCP Segment Format, TCP Checksum, Acknowledgements and Re-transmissions, Response to Congestion.
Routing in Autonomous System: Static vs. Dynamic interior routes, Routing Information Protocol (RIP), The Hello Protocol, The Open Shortest Path First protocol (OSPF).
The Domain Name System: Flat namespace, Hierarchical Names, Domain Name Resolution.
Real-Time IP Protocols: Audio and Video transmission and Reproduction, Filter and playback delay, Real-Time Transport Protocol (RTP), Streams, mixing and multicasting.
The course includes lab work based on theory taught.
Credits: 4; Prerequisite: ICE 302

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; Prequisite: 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 work based on theory taught.
Credits: 4; Prequisite: 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 work based on theory taught.
Credits: 4; Prequisite: ICE 311.

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; Prequisite: ICE 301.

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 work based on theory taught.
Credits: 4; Prequisite: ICE 107.

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 Prequisite: MAT 104.

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, poly-alphabetic 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: 4; Prerequisite: ICE 423.

ICE 433: Multimedia Communications
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: 4; 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.
Credits: 3; Perquisite: ICE 320.

ICE 437: Telecommunications System Design
Telecommunications Switching Systems Fundamentals: Description of services using information flows and SDL diagrams. System Operation: Description of system components; description of system interface; description of use of SDT CASE tool. Organizational Approach: Group organization and tasks; group interaction mechanisms; Gantt chart and deliverables; review; gates; report formats.
The course includes lab works based on theory taught.
Credits: 4; Prerequisite: ICE 412

ICE 438: Wireless Networks
Course overview and history, radio access, modulation, physical layer rudiments, error control, multiple accesses, TDMA, CDMA. Network layer, protocols, switching, signaling, mobility management, traffic engineering and management. First generation cellular, AMPS, signaling, digital AMPS, network design. Second generation voice systems, speech coding, TDMA/IS-136, CDMA/IS-95, GSM. Mobile data systems, GPRS, mobile IP, wireless LANs, CSMA/CD, IEEE 802.11, wireless residential networks, satellite telephony. Cellular Digital Packet Data (CDPD), architecture, MAC protocol, wireless ATM. Third and fourth generation mobiles, UMTS services, architecture and infrastructure. Network operations and traffic control. Security, cryptography, authentication, key management.
The course includes lab works based on theory taught.
Credits: 4; Prerequisite: ICE 412.

ICE 439: Design of Real Time Systems
Introduction: Nature of RT systems, RT operating systems, RT programming languages. C language constructs: Data structures and linked lists. Relation to task management.
RT Objects: Tasks, event flags, shared memory, semaphores, messages, and signals.
Tasks: Co-ordination using event flags; local, public and private event flags; waiting on event flags; event flag management.
Message Buffers and Mailboxes: Reasons to use message buffers; mailbox commands; use of mailboxes.
Semaphores and Controlled Shared Variables: Reasons for using semaphores, semaphore use, control of shared variables.
Task Co-Ordination and Signals: Signaling procedures; task-to-task communications; single sided and double sided co-ordination; other co-ordination methods.
Real-time kernel example: mC/OS kernel is examined in detail to show how real-time kernel services are implemented.
Debugging Real-time Systems: Debugger task; monitor task; fault codes and exception handling.
Analysis of real-time systems: Reliability models discussed. Basic queuing theory.
Design of Real-time systems: software design models. System specification standards.
The course includes lab works based on theory taught.
Credits: 4; Prerequisite: ICE 325.

ICE 440: Telecommunication Network Management
Radio frequency management, allocation of spectrum, regulations for spectrum use, common carriers, satellite and cables, competition and compliance, ITU; long term policy planning; management and organization of electronics and telecommunications industry; concepts of engineering and technology management, innovation process, technological change, technological organizations, motivation and leadership theories applicable to engineers and scientists, engineering and R&D projects, resource management in current and emerging technologies, and strategic management of technological system interfaces, communication and team building for engineering driven organization, engineering economic analysis and economics of technology innovation, project management, productivity analysis, technology forecasting, assessment, acquisition and transfer, technopreneurship, venture financing,

corporate governance and organizational transformation management.
Credit: 3; Prerequisite: None

ICE 447: Distributed Systems & Algorithm
Formal approaches to distribute 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: 4; Perquisite: ICE 325.

ICE 498: Project Work
Each student will be assigned a project under the supervision of a faculty member. The student must complete the project within one consecutive semester.
Credits: 3; Prequisite: All Required Courses.

ICE 499: Industrial Training
Each student will be placed for industrial training of one semester duration in an organization of related industry. The student must complete the training within one consecutive semester.
Credits: 3 Prequisite: All Required Courses.

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: MGT101 MKT101 ECO102

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: ITB301

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: ITB301

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: ITB301 FIN201

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: ITB301

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: ITB301

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 today'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 sect oral 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: ITB301

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: FIN201

ITB/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: ITB301 MKT201

MAT 100: College Mathematics

Differential Calculus: Function, Basic concepts on Limits & Continuity, Techniques of Differentiation, Indeterminate forms, Maxima and Minima of Functions, Point of Inflection, Functions of Two or More Variables, Partial Derivatives, Homogeneous Function, Euler's Theorem on Homogeneous Functions. Integral Calculus: Integration-the inverse of Differentiation, Integration by substitution, Definite Integral. Matrix: Different types of Matrix and Matrix operation, Identity Matrix, Minor, cofactor, Adjoin and Inverse of a Matrix. *System of linear equations: Solution of a system of linear equations* By using - Gauss Jordan Elimination Method, Inverse Method and Cramer's rule. Permutation and Combination, Binomial Theorem.

MAT 101: Differential & Integral Calculus

Differential Calculus: Limit, Continuity and differentiability. Successive differentiation of various types of functions. Leibniz's theorem. Rolle's theorem. Mean value theorems. Taylor's and Maclaurin's theorems in finite and infinite forms. Lagrange's form of remainders. Cauchy's form of remainders. Expansion of functions. Evaluation of indeterminate forms by L'Hospital rule. Partial differentiation. Euler's theorem. Tangent and normal. Concavity of functions. Determination of maximum and minimum values of functions and points of inflection with Applications. Curvature, Asymptotes.

Integral Calculus: Integration by the method of substitution. Standard integrals. Integration by successive reduction. Definite integrals, its properties and use in summing series. Walli's formulae. Improper integrals. Beta function and Gamma function. Area under a plane curve and area of a region enclosed by two curves in cartesian and polar co-ordinates. Volumes of solids of revolution. Volume of hollow solids of revolution by shell method. Area of surface of revolution. Jacobians. Multiple integrals with applications.

Credits: 3; Pre-requisites: None.

MAT 102: Differential Equations & Special Functions

Ordinary Differential Equations: Degree and order of ordinary differential equations. Formation of differential equations. Solutions of first order differential equations; Separable & homogeneous equations, Exact equation. Integrating factor. Equations made exact by integrating factors. First order linear equation. Bernoulli's equation. Higher order linear homogeneous equation with constant coefficients. Initial and Boundary value problems. Linear non-homogeneous equation with constant coefficients: Method of undetermined coefficients, Method of variation of parameters, Operator method; Series solution; Frobenius method.

Partial Differential Equations: Formation of PDEs & First order linear PDEs. Solution of PDEs of first order; Lagrange's Method. Second Order homogeneous & non-homogeneous PDEs with constant coefficients. Wave equations. Particular solutions with boundary and initial conditions.

Special Functions: Legendre differential equation and Legendre polynomials, Recurrence relations for Legendre polynomials, Spherical harmonics, Bessel differential equation, Bessel functions, Recurrence relations for Bessel functions, Modified Bessel functions, Hermite differential equation, Hermite polynomials, Hyper-geometric function.

Credits: 3; Pre-requisites: MAT101.

MAT 104: Co-ordinate Geometry and Vector Analysis

Two-Dimensional Geometry: Change of axes, transformation of co-ordinates, Pair of straight lines, Circles: Tangents and Normals, Chord of

Contact, System of Circles: Orthogonal Circles. Conic Section: Parabola, Ellipse & Hyperbola. The general equation of second degree, Identification of Conics.
Three-Dimensional Geometry: Co-ordinate systems; Direction cosines & direction ratios, Plane, Straight line: The Shortest distance, Sphere: Tangent Plane. Cylinder and Cone.
Vector Analysis: Vectors and Scalars, Algebra of vectors, Vector differentiation and vector integration, Gradient, Divergence and Curl: Cartesian, Spherical, Polar and cylindrical systems, Physical significance of Gradient, Divergence and Curl. Green's theorem, Divergence theorem, Stoke's theorem and their applications.
Credits: 3; Pre-requisites: None.

MAT 110: Mathematics for Business and Economics I

Number System, Functions and Graphs: Linear functions and Straight lines, Quadratic Functions and Parabolas, Exponential and Logarithmic Functions and their applications in simplex and compound interest, Effective rate, Concept of Future Value and Present Value of an Annuity. Solving a system of Linear Equations, Matrices and their applications. Static Equilibrium Analysis- Linear Model. Concept of Comparative Static and Derivatives, Partial of Differentiation and Total derivative with application.
Optimization problem (Unconstrained) one or more than choice variables. Applications in Economics and Business Model.

MAT 201: Linear Algebra

Systems of linear equations and matrices: Introduction to systems of linear equations, Gaussian elimination and Gauss-Jordan 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 determent, Evaluating determinants by row reduction, Properties of the determinant function, Cofactor expansion and Formation of Adjoint matrix; Cramer's rule. General vector space: Real vector space, Subspace, Linear independence, Basis and dimension, Row space, column space and null space, Rank and nullity. Inner product spaces: Inner products, Angle and orthogonality in inner product spaces, Orthonormal bases; Gram-Schmidt process; QR-decomposition, Best approximation; least squares, Orthogonal matrices; change of basis. Eigenvalues and eigenvalues: Concepts on eigenvalues and eigenvalues, Digitalization, Orthogonal diagonalization. Linear transformation: General linear transformation, Kernel and range, Inverse linear transformations, Matrices of general linear transformations. LU-decomposition: Solving linear system by factorization.
Credits: 3; Pre-requisites: MAT102.

MAT 211: Mathematics for Business and Economics II

Equilibrium Analysis: Partial market Equilibrium, General market Equilibrium. Marginal Analysis in Business and Economics, First derivatives and graphs, Second derivatives and Graphs. Optimization problems (Unconstrained): One or more than one choice variables. Optimization with equality constraints. Economic Dynamics and integral calculus. Linear programming: General Formulation of Linear Programming Model, Solving LP problem Using Graphical Method and Simplex Method. Duality of a LP problem.

MAT 301: Complex Variables & Mathematical Transforms

Complex Variables: Complex number system, General functions of a complex variable, Limits and Continuity, Complex differentiation, Analytic functions, Cauchy Riemann equations, Necessary and Sufficient conditions. Singularities: Classification of singularities. Line integrals of complex functions, Cauchy's theorem, Cauchy's integral formula, Liouville's theorem, Taylor's and Laurent's series. The Residue theorem, Contour integration, Conformal mapping and its application.
Laplace transform: Definition of Laplace transform, Laplace transform of different functions, Inverse Laplace transform, Convolution theorem, evaluation of improper integrals by Laplace transforms, Solution of differential equation by Laplace transforms.
Fourier Analysis: Fourier series; Dirichlet's conditions, Parseval's theorem, Fourier integral

and Fourier transforms. Application of Fourier transforms in solving boundary value problems.
Credits: 3; Pre-requisites: MAT102.

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 manager 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: BUS101 ENG101

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: MGT101

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: MAT110 STA101,MGT101

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: STA327, MGT101

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: MGT251

MGT 410: International Labor Management
This course 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 developed market economies, 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: BUS361, MGT101

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 legal responsibilities. It concludes some tips for the future applications and shows the students the need for a business plan.
Credits: 3 Prerequisite: MGT101

MGT 425: Total Quality Management
Examines major issues of TQM principles and theories. Topics include Demings, Jurans, Crrosbys TQM principles, JIT, HRM, Leadership theories, Quality and operational research.
Credits: 3 Prerequisite: MGT101

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: MGT101

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: ITB301 MGT101

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: MGT251

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: 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:CSE101

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: MIS101

MIS 401: Structural Programming
Introduction to Basic Programming Concepts. Writing Algorithms, Pseudo-Code and developing flowcharts. Coding, 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, input/output, dynamic variables, etc. The course includes lab works based on theory taught.
Credits: 3 Prerequisite: MIS305

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: MIS305

MIS 403: Object Oriented Programming
The Objective of this course is to introduce the concept of object oriented programming to MIS students. It will include Object oriented concepts: Classes, objects, methods, polymorphism and inheritance with C++/Java. This course will cover syntax, idioms and patterns of C++/Java so that students are comfortable with object oriented programming. It will cover the essentials of the C++/Java class library and introduce event driven Graphical User Interface (GUI) programming. This course includes extensive lab work.
Credits: 3 Prerequisite:MIS305,MIS401

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: MIS305

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:MIS305

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: MIS305

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, browsing, connectivity in heterogeneous environments, SNMP services, fine tuning and optimization, trouble shooting, and administration of exchange server.
Credits: 3 Prerequisite: MIS404

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: MIS408

MIS 410: 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 in evolving distributed database systems. The course includes lab works based on theory taught.
Credits: 3, Perquisite: MIS305

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: MIS305

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:MIS305

MKT 101: Principles of Marketing
Principle of marketing course is designed to give 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: BUS101

MKT 201: Marketing Management
Management of the firms 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: MKT101

MKT 401: Sales Management
Analysis of the management of the sales effort within the marketing system. Philosophies, concepts, and judgment criteria of the sales function in relationship to the total marketing program.
Credits: 3 Prerequisite: MKT201

MKT 402: Integrated Marketing Communication
A concept of integrated marketing communications recognizes the added value of a comprehensive plan that evaluates the

strategic roles of a variety of communication disciplines and combines these disciplined to provide clarity, consistency and maximum communications impact. Topics Included: All above (Advertising, Personal selling, Sales promotion etc.) and below the line (Non-Conventional activities) techniques.
Credits: 3 Prerequisite: MKT201

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: MKT201

MKT 411: Export-Import Management
Export-Import procedures/transactions; actors which include the banks, insurers, shippers, clearing & forwarding agents etc associated with export and import activities; documents which include L/C, shipping Documents, Certificate of Origin, etc required for trade transactions and policies including incentive plan, foreign exchange regulation, export-import promotion methods, quota, tariffs etc which affect export-import activities will be discussed in this course.
Credits 3 Prerequisite: MKT201

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: MKT201

MKT 414: Marketing Research
The basic procedures and theories appropriate to solve various types of marketing problems in the context of business organization and decision models.
Credits: 3 Prerequisite: STA327, MKT201

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 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: Supply Chain Management
Integration of physical distribution activities of the firm into a system. Transportation and location as elements of the system. Inventories and service as constraints upon the system. Planning, operation and management of the system.
Credits: 3 Prerequisite: MKT201

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: STA101, MKT201

MKT/ITB 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: ITB301 MKT201

PHRM 101: Physical Pharmacy I
The objective is to introduce to students the basic aspects of physical chemistry having application in Pharmacy which includes different states of matter, solutions, pH buffers, chemical kinetics.
Credits: 4, Prerequisite: None

PHRM 102: Cell Biology & Anatomy
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 histological perspective of human development.
Credits: 3, Prerequisite: None

PHRM 103: Organic Pharmacy I
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.
Credits: 4, Prerequisite: None

PHRM 201: Human Physiology I
The essential concern of physiology is how living things work and, as physiology relates to man, it is the study of the normal functioning of the human body. The course objective is to provide students with a basic understanding of the specific function of the major organs and systems of the body. The functions of major body systems include homeopathic, gastrointestinal, cardiovascular, respiratory, excretory, nervous and reproductive system.
Credits: 4, 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. Simultaneously, Morphology, nutritional requirements, growth of bacteria, virus, fungi., mould & yeast will be briefly studied.
Credits: 4, Prerequisite: None

PHRM 203: Pharmaceutical Analysis -I
The aim of this course is to familiarize students with the knowledge of arts and science of pharmaceutical analysis including various aspects of pharmaceutical calculations, titrimetic methods including aqueous acid base titrations, theory of indicators, complex metric titration, oxidation reduction titrations and analysis of fixed oils, fats and waxes.
Credits: 4, Prerequisite: PHRM 101

PHRM 204: Physical Pharmacy II
The objective of this course is to provide knowledge to students about the principles of physico-chemical parameters involved in drug formulation process and the factors involved. Specifically to provide knowledge on stability of drugs formulation solutions. Mechanism of degradation by varied process, rate of degradation, formulation approaches dealing with stabilization.
Credits: 4, Prerequisite: PHRM 101

PHRM 205: Inorganic Pharmacy
The course offers knowledge of various aspects of physical and chemical behavior of inorganic elements, compounds and their application as drugs.
Credits: 4, Prerequisite: PHRM 103

PHRM 206: Biochemistry
The course offers 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: 4, Prerequisite: PHRM 103

PHRM 207: Pharmacognosy I
Theoretical and applied course designed to acquaint the student with the isolation, 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. Credits: 4, Prerequisite: None

PHRM 208: Human Physiology II
This course will deal with the transport, 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: 4, Prerequisite: PHRM 201

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.
Credits: 3, Prerequisite: None

PHRM 210: Pharmaceutics I
The course will provide 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, formulation of dosage forms, and the processes and equipment in their large-scale manufacture.
Credit: 4, Prerequisite: None

PHRM 211: Organic Pharmacy II
The course is designed to provide advanced knowledge on organic chemistry to the students of pharmacy. The courses includes studies on stereochemistry, heterocyclic compounds-mono cyclic (reaction, synthesis & nomenclature) polyhydroxy alcohols, alkaloids, terpenes, purines sulpha drugs their properties & synthesis. Mechanism of organic reactions (Sn1, Sn2, E1, E2 etc).
Credit: 3, Prerequisite: PHRM103

PHRM 301: 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.
Credits: 3, Prerequisite: PHRM 208

PHRM 302: 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 medicines including structure activity relationship, biochemical and physiochemical properties of different therapeutic classes of medicines.
Credits: 3, Prerequisite: PHRM 206

PHRM 303: Pharmacognosy II
Its scope includes the study of the physical, chemical, biochemical and biological properties of drugs, drug substances, or potential drugs or drug substances of natural origin as well as the search for new drugs from natural sources. This course includes photochemistry and pharmaceutical uses of the plant constituents like glycosides and glycoside containing drugs, alkaloids, volatile oils and related terpenoids, Phenolic compounds and tannins, resins.
Credits: 3, Prerequisite: PHRM 207

PHRM 304: Medicinal Chemistry II
The course aims at 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.
Credits: 4, Prerequisite: PHRM 302

PHRM 305: Pharmaceutical Microbiology
This course offers a general overview of the applied aspects of microbiology including sterilization processes, sterility tests of various pharmaceutical products, aseptic techniques and immunological preparations.
Credits: 4, 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.

Knowledge of basic pharmacology to be used to assess drug manufacturers' claims is included in the laboratory course.
Credits: 4, Prerequisite: PHRM 301

PHRM 307: Pharmaceutical Technology 1
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. In this course, students will be familiar with the different types of Liquid dosage forms, suspensions, emulsions & suppositories.
Credits: 3, Prerequisite: PHRM 210

PHRM 308: 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.
Credits: 4, Prerequisite: PHRM 210

PHRM 309: Pharmaceutical Analysis II
The objective of the course is to equip the students with the knowledge of pharmaceutical analysis of the dosage forms following more precise methods such as aquametry, nonaqueo9us titrations, spectrophotometry and fluorometry...
Credits: 4, Prerequisite: PHRM 203

PHRM 310: Toxicology
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 for different types of toxins.
Credits: 3, Prerequisite: PHRM 301

PHRM 311: Clinical & Hospital Pharmacy
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.
Credits: 3, Prerequisite: PHRM 310

PHRM 312: Pharmaceutical Analysis III
The course is offered to give the detailed knowledge of principle, theory and applications of column chromatography, gel filtration, thin layer chromatography, ion exchange chromatography, Gas chromatography, HPLC, potentiometric titrations theorimetry and some preliminary aspects of UV & ESR spectrophotometer.
Credits: 3, Prerequisite: PHRM 203

PHRM 401: 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 discuses the role and purpose of marketing activities within a Pharmaceutical Organization, the social and environmental impact of marketing activities, the ethical dilemmas faced by marketing decision makers in medico marketing activities. International Pharmaceutical business, effective sales management & management marketing planning.
Credits: 3, Prerequisite: PHRM 307

PHRM 402: Pharmaceutical Technology II
The course is introduced to educate the students regarding the engineering aspects of pharmaceutical production technology & the principles involved in drying, freeze drying, filtration, entrifugation & mixing etc.
Credits: 4, Prerequisites: PHRM 307

PHRM 403: 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, distereoisomers, conformational isomers and geometric isomers.
Credits: 3, Prerequisite: PHRM 304

PHRM 404: 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.
Credits: 5, Prerequisite: Minimum 90 Credits Completed.

PHRM 405: Pharmacy Quality Assurance
The course is intended to introduce the students with the manufacturing equipments & process, quality control, in-process control & finished products. They willunderstand Good Manufacturing Practice (GMP), QA & QC, storage of raw materials, entry & distribution, able to follow standard operatig proceduse (SOP) and the flow of manufacturing process
Credits: 3, Prerequisite: PHRM 307

PHRM 406: Biopharmaceutics & Pharmacokinetics
This course explores how the fate of drugs in the body is influenced by physiological and biochemical processes. It will give an overview of the time course of drug action in human body.
Credit: 4, Prerequisite: PHRM 308

PHRM 407: Pharmaceutical Biotechnology
The course offers 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: 3, Prerequisite: PHRM 305

PHRM 408: Safety, Health & Environment
The objective of this course is to understand the causes of environmental pollution such as toxic gases, suspended particles and heavy metals and anti oxidents. Emphasis will be made on hazardous aspects of pollutants generated from formulation of different dosages forms and industrial solid, liquid and effluents. The workers safety and health aspects will be monitored and controlled.
Credits: 3, Prerequisite: PHRM 202, PHRM 301

PHRM 409: Advanced Pharmaceutical Analysis
The objective of this course is to orient students with various instrumental methods of analysis and make understand the principles of operation and uses of these techniques. This includes UV spectroscopy, infrared spectroscopy, mass spectrometry, nuclear magnetic resonance spectroscopy and microbiological assay.
Credits: 4, Prerequisite: PHRM 309

PHRM 410: Pharmacy 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
Credits: 3, Prerequisite: PHRM 301

PHRM 411: Cosmetology
The course offers concepts of designing various cosmetics preparations in small & large scale. It includes general aspects of cosmetology, skin preparations, hair preparations, shaving preparations and others.
Credits: 3; Prerequisites: PHRM 307

PHRM 412: Medicinal Chemistry III
The objective of this course is to orient students with the advances in the heterocyclic chemistry, few important name reactions; synthesis, SAR & therapeutic uses of anti tubercular & antiheroic drugs; anti aging drugs; contraceptives, vitamins & new drugs therapy lines.
Credits: 4; Prerequisites: PHRM 304

PHRM 413: Pharmacology III

This course emphasizes the absorption, mechanism of actions, physicochemical effects, side effects, indication, precautions, contraindications and interactions of various hormonal preparations, contraceptives, anti-diabetic, anticancer and other miscellaneous drugs e.g. vitamins, chelating agents, antiseptic, disinfectant, immunosuppressant and gene therapy, vaccines and sera etc.
Credits: 4; Prerequisites: PHRM 306

PHRM 414: Pharmaceutical Engineering

The objective of this course is to study the engineering aspects of pharmaceutical production technology and the principles involved in humudity control refrigeration air conditioning i.e HVAC system, pilot plant layout design enviromental pollution effluents.
Credits: 3

PHY 100: Introductory Physics

Vectors: Concepts of vectors and scalars; algebra of vectors, differentiation and integration of vectors, gradient, divergence, and curl.

Force and Motion: Newton's laws of motion; frictional force, motion in more than one-dimensions; uniform circular motion; work, energy and power, linear momentum, angular monentum and torque, Newton's law of gravitation, Kepler's laws.

Waves and Oscillatins: Simple harmonic motion; damaped harmonic motion; forced oscillation and resonance; different types of waves; interference of waves; standing waves and resonance; Doppler Effect.

Electricity: Electric charge and Coulomb's law; electric field and electric potential; electric dipole, electric current and Ohm's law.

Magnetism: Biot-Savart Law, Ampere's law; solenoid and toroid; Faraday's law of electromagnetic induction.

Optics: Light as electromagnetic wave; reflection and refraction of light; total internal refection; interference of light; Michelson interferometer, diffraction of light; polarization of light.

Credits: 3; Pre-requisites: MAT 101.

PHY 101: Physics I (Mechanics, Waves & Thermodynamics)

Vectors: Algebra of vectors; calculus of vectors; gradient, divergence and curl.

Mechanics: Force and momentum, Newton's laws, work and energy, conservation of momentum involving friction, simple rotational systems; elasticity and its different modulii.

Introduction to Fluid Mechanics: Basic principle of hydrostatics and streamline fluid flow relating to buoyancy, forces in hydraulic systems, Bernoulli's principle; surface tension and viscosity.

Waves: Different types of waves; harmonic motion in simple vibrating systems damped and forced oscillations, wave propagation and transmission of vibrations and sound, Doppler effect.

Thermodynamics: Concept of temperature and zeroth law of thermodynamics; first law of thermodynamics and its application; isothermal and adiabatic relations; work done by a gas; kinetic theory of gases; Vander Waals equation of state; second law of thermodynamics - reversible and irreversible processes; Carnot cycle; Carnot's theorem; concept of entropy.

Credits: 4; Pre-requisites: MAT 101.

PHY 102: Physics II (Electricity, Magnetism & Physical Optics)

Electricity: Concept of electric charge, conductors and insulators, permittivity of a medium, Coulomb's law, the electric field, lines of force, dipole in an electric field, electric flux, Gauss' law, electric potential, relation between electric potential and electric field, capacitance, calculation of capacitance, different types of capacitors, capacitors with dielectric, energy storage in an electric field, charging and discharging of a capacitor, time constant.

Magnetism: Permeability of a medium, the magnetic field, Biot-Savart law, Ampere's law, magnetic force on a current, magnetic lines of induction, force between two parallel current carrying conductors, Electromagnetic Induction: Faraday's law, Lenz's law, self and mutual induction, and transient response in LR circuit.

Physical Optics: Light as electromagnetic wave; reflection and refraction of light; total internal reflection; interference of light, interference fringes, Michelson interferometer, Newton's ring; Fresnel and Fraunhofer diffractins, diffraction by single slit, diffraction by double slits, diffraction gratings and its resolving power; polarization of light, different types of polarization, Nicol's prism, and optically active materials.
The course includes lab work based on theory taught.
Credits: 4; Pre-requisite: MAT 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 110

STA 102: Statistics and Probability
Introduction: Nature and scope, nature of statistical data, Attributes and variables, Discrete and continuous variables, Methods 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, Deciles, Percentiles; Measure of dispersion: Absolute measure, Relative measure, Range, Standard deviation, Mean deviation, Quartile deviation, Co-efficient of dispersion, Co-efficient of variation, Skewness and kurtosis; Regression and correlation: relation between variables, Fitting of regression lines, Simple correlation, multiple correlation and regression; Theory 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, Auto correlation function of a random process, multiple random process, Basic concepts of discrete and continuous probability distributions, Markov process, Queuing process; Sampling techniques; Test of significance: Test of means, Variance, Correlation coefficients and regression coefficients.
Credits: 3; Pre-requisites: None.

STA 217: 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

EWU 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

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

Abdul Mannan
MBA in Marketing
(University of Hawaii, Hawaii, USA)
M.Com. in Management
(University of Dhaka)

Md. Abdul Hye
Ph.D. in Accounting
(University of Dhaka)
M.Com. in Accounting
(University of Dhaka)

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Ph.D., University of St Andrews, U.K., 1990, Theoretical Plasma Physics
M.Sc., Jahangirnagar University, 1986, Physics

Abu Saleh Abdun Noor
Ph.D., Flinders University of S. A., Australia, 1980, Lattice Theory
M.Sc., University of Rajshahi, 1970, Mathematics

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(Boston University, USA)
MA in Economics
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M.Sc. in Agricultural Economics
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MSS in Economics
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MS in EEE
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Associate Professor

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MA in Engish
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