AMERICAN INTERNATIONAL UNIVERSITY-BANGLADESH (AIUB)

BACHELOR OF SCIENCE IN COMPUTER SCIENCE AND ENGINEERING (CSE)

CURRICULUM

The following curriculum for the program Bachelor of Science in Computer Science and Engineering has been updated as per the expert suggestions (ref# UGC/PriUni/287(04)/Part-1/94/7163) and the approval of the American International University-Bangladesh Academic Council.

COURSE STRUCTURE	CREDIT DISTRIBUTION
University Core	***20***
Languages	9
Business Management	6
Arts & Social Science	**5**
Science Core	***29***
Physical Science	11
Mathematics	18
Engineering Core	***27***
Computer Science Core	***48***
Capstone Course	***9***
Major Area Electives	***9***
Free Electives	***6***
TOTAL CREDITS	**148**

CONDUCT HOUR NOTATION & COMPUTATION	
Credit Hours per Course	***Conduct Hours per week***
1	1-hour Theory
2	2-hours Theory
3	3-hours theory
1/Lab	3-hours Laboratory
3/Lab	2-hours Theory + 3-hours Laboratory

COURSE SUMMERY

CODE	COURSE NAME	PREREQ.	CREDIT
UNIVERSITY CORE – 20 CREDITS			
LANGUAGES – 9 CREDITS			
ENG 1101	English Reading Skills and Public Speaking	NIL	3
ENG 1202	English Writing Skills and Communication	ENG 1101	3
ENG 2103	Business Communications	BAS 2101	3
BUSINESS MANAGEMENT – 6 CREDITS			
BBA 1102	Principles of Accounting	MAT 1205	3
MGT 3202	Engineering Management	EEE 2216	3
ARTS & SOCIAL SCIENCE - 5 CREDITS			
ECO 3150	Principles of Economics	MAT 3103	2
BAS 2101	Bangladesh Studies	CSC 1101	3

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CODE	COURSE NAME	PREREQ.	CREDIT
SCIENCE CORE – 29 CREDITS			
PHYSICAL SCIENCE - 11 CREDITS			
PHY 1101	Physics 1	NIL	3
PHY 1102	Physics 1 lab	NIL	1/Lab
PHY 1203	Physics 2	PHY 1101	3
PHY 1204	Physics 2 lab	PHY 1102	1/Lab
CHEM1101	Chemistry	PHY 1203	3/Lab
MATHEMATICS – 18 CREDITS			
MAT 1102	Diff Calculus & Co-ordinate Geometry	NIL	3
MAT 1205	Integral Calculus & Ord. Diff Equation	MAT 1102	3
MAT 2101	Complex Variable, Laplace & Z-transformation	MAT 1205	3
MAT 2202	Matrices, Vectors, Fourier analysis	MAT 2101	3
MAT 3101	Numerical Methods for Science & Engg.	MAT 2202	3
MAT 3103	Computational Statistics and Probability	MAT 2101	3
COMPUTER ENGINEERING CORES –27 CREDITS			
BAE 2101	Computer Aided Design & Drafting	NIL	1/Lab
COE 2101	Introduction to Electrical Circuits	PHY 1101	3
COE 2102	Introduction to Electrical Circuits Lab	PHY 1102	1/Lab
COE 3103	Data Communication	EEE3101, EEE3102	3/Lab
COE 3104	Microprocessor & Embedded System	EEE3101, EEE3102	3/Lab
COE 3205	Computer Organization & Architecture	COE 3102	3/Lab
COE 3206	Computer Networks	COE 3101	3/Lab
EEE 2103	Electronic Devices	EEE 2101	3
EEE 2104	Electronic Devices Lab	EEE 2102	1/Lab
EEE 2216	Engineering Ethics	CSC3112, COE3104	2
EEE 3101	Digital Logic & Circuits	EEE 2103	3
EEE 3102	Digital Logic & Circuits Lab	EEE 2104	1/Lab

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COMPUTER SCIENCE CORE – 48 CREDITS

CSC 1101	Introduction to Computer Studies	NIL	1/Lab
CSC 1102	Introduction to Programming	NIL	3
CSC 1103	Introduction to Programming Lab	NIL	1/Lab
CSC 1204	Discrete Mathematics	CSC1102, MAT1102	3
CSC 1205	Object Oriented Programming 1	CSC1102, CSC1103	3/Lab
CSC 2106	Data Structure	CSC1204, CSC1205	3
CSC 2107	Data Structure Lab	CSC1204, CSC1205	1/Lab
CSC 2108	Introduction to Database	CSC 1205	3/Lab
CSC 2209	Object Oriented Analysis & Design	CSC 2108	3
CSC 2210	Object Oriented Programming 2	CSC2106, CSC2108	3/Lab
CSC 2211	Algorithms	CSC2106, CSC2107	3/Lab
CSC 3112	Software Engineering	CSC 2209	3/Lab
CSC 3113	Theory of Computation	CSC 2211	3
CSC 3214	Operating Systems	CSC2211, COE3102	3/Lab
CSC 3215	Web Technologies	CSC 3112	3/Lab
CSC 3216	Compiler Design	CSC 3113	3/Lab
CSC 3217	Artificial Intelligence & Expert Sys.	CSC2211, MAT3103	3/Lab
CSC 4118	Computer Graphics	CSC2211, MAT2202	3/Lab

CAPSTONE COURSE – 9 CREDITS

CSC 4197	Research Methodology	100 Credits	3
CSC 4298	Thesis/Project	CSC 4197	3
CSC 4299	Internship	140 Credits	3

ELECTIVES from MAJOR AREAS – 15 CREDITS

9 credits (3 courses) from one Major Area;
6 credits (2 courses) from any Major Area

The Electives are 15 credits in total. The electives have been divided into four major areas as per the recommendation of the expert from the UGC. Four Major areas are –

- ***Computational Theory***: Representing the core computer science courses.
- ***Computer Engineering***: Representing the core engineering courses from the field of electrical & electronics engineering and computer engineering.
- ***Software Engineering***: Representing the core Software Engineering courses.
- ***Information Systems***: Representing the core Information Systems courses.

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Following are the Courses in each Major Area:

MAJOR AREA: *COMPUTATIONAL THEORY*

CSC 4125	Computer Science Mathematics	CSC2211, MAT3101	3
CSC 4126	Basic Graph Theory	CSC 2211	3
CSC 4127	Advanced Algorithm Techniques	CSC3217	3/Lab
CSC 4128	Linear Programming	CSC3217, MAT3103	3/Lab
CSC 4230	Bioinformatics	CSC 3217	3
CSC 4231	Parallel Computing	CSC2211, CSC3217	3
CSC 4232	Machine Learning	CSC 3217	3
CSC 4233	Natural Language Processing	CSC3217, CSC4162	3

MAJOR AREA: *COMPUTER ENGINEERING*

BAE 1201	Basic Mechanical Engineering	PHY 1203	3
COE 4125	Advanced Operating System	CSC 3214	3/Lab
COE 4126	Advanced Computer Networks	COE 3206	3/Lab
COE 4127	Network Resource Management & Organization	COE3103, COE3204	3
COE 4128	Digital System Design	COE3205	3
COE 4129	Multimedia Systems	CSC 3215	3
COE 4230	Simulation & Modeling	CSC3217	3/Lab
COE 4231	Image Processing	CSC4118	3
COE 4232	Network Security	COE 4141	3
COE 4233	Wireless Sensor Networks	COE 3206, COE 3103	3/Lab
COE 4234	Computer Vision & Pattern Recognition	CSC4118, CSC3217	3
COE 4235	Robotics Engineering	CSC3217, BAE1201	3/Lab
EEE 2213	Signals & Linear System	MAT 2202	3
EEE 3103	Digital Signal Processing	EEE 2213	3/Lab
EEE 4209	Telecommunications Engineering	COE3103	3/Lab
EEE 4217	VLSI Circuit Design	EEE 3101, EEE3102	3/Lab
EEE 4233	Digital Design with Sys. Verilog, VHDL & FPGAS FPGAs	EEE 4217	3/Lab
EEE 4241	Industrial Electronics, Drives & Instrumentation	EEE3101, EEE3102	3/Lab

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MAJOR AREA: *SOFTWARE ENGINEERING*

CSC 4160	Software Requirement Engineering	CSC 3112	3
CSC 4161	Advanced Programming in Web Technology	CSC 3215	3/Lab
CSC 4162	Programming in Python	CSC 3215	3/Lab
CSC 4163	Advanced Programming with JAVA	CSC 3215	3/Lab
CSC 4164	Advanced Programming with .NET	CSC 3215	3/Lab
CSC 4270	Software Development Project Management	CSC 4160	3
CSC 4271	Software Quality and Testing	CSC 4160	3
CSC 4272	Mobile Application Development	CSC 3215	3/Lab
CSC 4273	Software Architecture and Design Patterns	CSC 4160	3
CSC 4274	Virtual Reality Systems Design	CSC 2210	3/Lab

MAJOR AREA: *INFORMATION SYSTEMS*

CSC 4180	Introduction to Data Science	CSC 3217	3/Lab
CSC 4181	Advance Database Management System	CSC 2108	3/Lab
CSC 4182	Human Computer Interaction	CSC3217, CSC3215	3
CSC 4183	Cyber Laws & Information Security	CSC 3215	3
CSC 4285	Data Warehouse and Data Mining	CSC 4180	3
MIS 3101	Management Information System	CSC 3112	3
MIS 4007	Digital Marketing	MIS3101, CSC3215	3
MIS 4011	Enterprise Resource Planning	MIS3101, CSC3112	3
MIS 4012	E-Commerce, E-Governance & E-Series	CSC 3215	3
MIS 4014	Business Intelligence & Decision Support	MIS 4011	3

TOTAL CREDITS: 148

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CSE Students may take a MINOR in "Minor in 3D Modeling and Animation" by completing additional 4 courses offered by the Media and Mass Communication (MMC) department of AIUB. Requirements are as follows:

Students Must complete MMC 4119: Introduction to Animation and MMC 4220: Animation Production and select two courses from the list of Elective Courses.

MINOR IN *3D MODELING AND ANIMATION*

MMC 4119	Introduction to Animation	None	3
MMC 4220	Animation Production	MMC 4119	3
	Elective 1		
	Elective 2		

List of Elective Courses for Minor (Students can choose any two courses from this list)

MMC 4118	Introduction to Drawing and Design	MMC 4119, MMC 4220	3
MMC 4221	3-D Character Animation	MMC 4119, MMC 4220	3
MMC 4222	Special and Visual Effects	MMC 4119, MMC 4220	3
MMC 4223	Writing for Animation	MMC 4119, MMC 4220	3
MMC 4224	Advance Animation & Set-Up	MMC 4119, MMC 4220	3
MMC 4225	3-D Character Modeling	MMC 4119, MMC 4220	3/Visit
MMC 4226	Advance 3-D Character Modeling and Lighting	MMC 4119, MMC 4220	3