



**SCHEME**  
**For**  
**B.TECH COURSE**  
**In**  
**COMPUTER ENGINEERING**  
**(w.e.f Session 2016)**



**DEPARTMENT OF COMPUTER ENGINEERING**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**YMCA UNIVERSITY OF SCIENCE AND TECHNOLOGY**  
**FARIDABAD**



# YMCA UNIVERSITY OF SCIENCE & TECHNOLOGY

## VISION

“YMCA University of Science and Technology aspires to be a nationally and internationally acclaimed leader in technical and higher education in all spheres which transforms the life of students through integration of teaching, research and character building.

## MISSION

- To contribute to the development of science and technology by synthesizing teaching, research and creative activities.
- To provide an enviable research environment and state-of-the art technological exposure to its scholars.
- To develop human potential to its fullest extent and make them emerge as world class leaders in their professions and enthuse them towards their social responsibilities.



## **DEPARTMENT OF COMPUTER ENGINEERING**

### **VISION**

The department aims to make a place at both national and international level by producing high quality ethically rich computer engineers conversant with the state-of-the-art technology with the ability to adapt the upcoming technologies to cater to the ever changing industrial demands and societal needs. It endeavours to establish itself as a centre of excellence by contributing to research areas having IT impact on the people's life and nation's growth.

### **MISSION**

- To provide the future leaders in the area of computer engineering and information technology through the development of human intellectual potential to its fullest extent.
- To enable the students to acquire globally competence through problem solving skills and exposure to latest developments in IT related technologies.
- To educate the students about their professional and ethical responsibilities.
- To ensure continuous interaction with the industry and academia through collaborative research projects.



## ABOUT THE PROGRAM

The Bachelor of Technology (B. Tech.) program in Computer Engineering has a strong flavor on design and hands-on experience. The program includes a deeper study of a number of engineering subjects to which students are introduced at the core curriculum level, theoretical and programming solutions of real world problems and design of systems relevant to the software organizations. The areas introduced by the department include software engineering, software testing, web crawlers, information retrieval, computer networks and data structures etc. Besides the theoretical and laboratory based curriculum, students complete an advanced programming project in the final year of the program including one full semester in an industry

This degree provides a solid foundation in core Computer Engineering disciplines, critical thinking and problem-solving skills. Through the academic program, students also develop excellent written and oral communication skills, learn to work as a team and project management.



## DEPARTMENT OF COMPUTER ENGINEERING

### B.TECH PROGRAMME

#### PROGRAMME EDUCATION OBJECTIVES

PEO1	To create knowledge about core areas related to the field of computer science and information technology.
PEO2	To enable students to apply mathematics, science and computer engineering principles to model, design and implement software projects to meet customers' business objectives.
PEO3	To develop the ability to evaluate the computing systems from view point of quality, security, privacy, cost effectiveness, utility and ethics.
PEO4	To inculcate lifelong learning by introducing principles of group dynamics, public policies, environmental and societal context

#### PROGRAMME OUTCOMES

PO1	Ability to design algorithms for real world computational problems and analyze their complexities.
PO2	Ability to design and develop computing systems using concepts of mathematics, computer engineering and other related disciplines.
PO3	Ability to design and develop interfaces among subsystems of computing.
PO4	Ability to provide software simulation based solutions to engineering problems.
PO5	Ability to work in multicultural & multidisciplinary environment and pursue entrepreneurship.
PO6	Ability to train and generate skilled technical manpower for creating an intellectual reservoir to meet the growing demands of nation.



**YMCA UNIVERSITY OF SCIENCE AND TECHNOLOGY  
FARIDABAD**

**SYNOPSIS OF  
SCHEME OF STUDIES & EXAMINATIONS  
4 YEARS B.TECH SEMESTER I-VIII (w.e.f 2016)**

**Total Credits: 225**  
**Total Theory Subjects: 43**  
**Total Labs (including Seminars, workshops & Projects): 25**  
**Total Industrial Training: 01**

**Total Teaching Schedule:**

<b>Lectures</b>	<b>Practical</b>	<b>Total</b>
<b>166</b>	<b>96</b>	<b>262</b>

**Total Marks:**

<b>Sessionals</b>	<b>End Term</b>	<b>Total</b>
<b>2800</b>	<b>3400</b>	<b>6200</b>

**Itemised Break-up:**

	<b>No.</b>	<b>Hours</b>	<b>Marks</b>	<b>Credits</b>
<b>Theory Subjects</b>	<b>43</b>	<b>166</b>	<b>4300</b>	<b>164</b>
<b>Labs</b>	<b>23</b>	<b>90</b>	<b>1250</b>	<b>43</b>
<b>Seminar</b>	<b>01</b>	<b>02</b>	<b>50</b>	<b>02</b>
<b>Projects</b>	<b>01</b>	<b>04</b>	<b>100</b>	<b>04</b>
<b>Industrial Training</b>	<b>01</b>	<b>40</b>	<b>500</b>	<b>12</b>
<b>Total</b>	<b>69</b>	<b>302</b>	<b>6200</b>	<b>225</b>



## CHOICE BASED CREDIT SYSTEM SCHEME

<b>Discipline Core Courses(DCC)</b>			
Sr. No.	Name of the subject	No. of Lectures+Tutorials	No of Credits
1.	Data Structures using C	4	4
2.	Discrete Structures	4	4
3.	Computer Networks	4	4
4.	Digital Electronics and Computer Organization	4	4
5.	Theory of Automata & Computation	4	4
6.	Introduction to E-commerce and ERP	4	4
7.	Database Management System	4	4
8.	Analysis and Design of Algorithms	4	4
9.	System Software Design	4	4
10.	Object-Oriented Programming using C++	4	4
11.	Microprocessor and Interfacing	4	4
12.	Wireless Communication	4	4
13.	Principles of Operating System	4	4
14.	Internet Fundamentals & Web Technology	4	4
15.	Computer Graphics and Multimedia Technology	4	4
16.	Core Java	4	4
17.	Data Warehousing and Data Mining	4	4
18.	Principles of Software Engineering	4	4
19.	Unix and Shell programming	4	4
20.	Digital System Design	4	4
21.	Cloud Computing	4	4
22.	Advanced Computer Architecture	4	4
23.	Security of Information Systems	4	4
24.	Software Testing	4	4
		Total Credits	96

**Labs**



Sr. No.	Name of the lab	No. of contact hours	Credits
1	Data Structures using C Lab	4	2
2	Digital Electronics Lab	4	2
3	Software Tools Lab	4	2
4	DBMS Lab	4	2
5	C++ Programming Lab	4	2
6	MPI Lab	4	2
7	Operating System Lab	4	2
8	Internet Fundamentals & Web Technology Lab	4	2
9	Computer Graphics and Multimedia Technology Lab	4	2
10	Core Java Lab	4	2
11	Principal of Software Engineering Lab	4	2
12	Unix & Shell Programming Lab	4	2
13	Digital System Design Lab	4	2
14	Software Testing Lab	4	2
		Total Credits	28

<b>Discipline Elective Courses(DEC)</b>			
Sr. No.	Name of the subjects	No. of contact hours	Credits
DEC Group I	Distributed Operating System	3	3
	Data Compression Techniques	3	3
	Fuzzy Logic	3	3
	Real Time System	3	3
DEC Group II	Expert Systems	3	3
	Advanced Client Server Technology	3	3
	Neural Networks	3	3
	Natural Language Processing	3	3
DEC	Object-oriented System Development	3	3
	Software Project Management	3	3
	Wireless Sensor Networks	3	3
	Logic and Functional Programming	3	3



Group III	Android Application Development	3	3
DEC Group IV	Network Programming and Administration	3	3
	Mobile Ad-hoc Networks	3	3
	Web Mining	3	3
	Agent Based Computing	3	3
	Internet of Things	3	3
	Semantic Web	3	3

#### Annexure D List (Open Electives Course (OEC))

Sr. No.	Name of the Subject	No. of contact hours	Credits
1	Intelligent Systems	3	3
2	Cyber laws and Security	3	3
3	Soft Computing	3	3
4	Web Information Retrieval	3	3
5	Intellectual property rights	3	3

#### Mandatory Audit Courses (MAC )

Sr. No.	Name of the subject	No. of contact hours	Credits
1.	German-1	2	
2.	German-2(With German-1 as prerequisite)	2	
3.	French-1	2	
4	French-2(With French-1 as prerequisite)	2	
5	Sanskrit-1	2	
6	Sanskrit-2(With Sanskrit-1 as prerequisite)	2	
7	Personality Development	2	
8	Interview and Group discussion skills	2	
9	Yoga and Meditation	2	
10	Art of living/Living Skills	2	
11	Contribution of NSS towards Nation/role of NSS	2	
12	Physical Education	2	



**YMCA University of Science and Technology, Faridabad**  
**B.Tech (Computer Engineering)**  
**Scheme of Studies / Examination**

**Semester – 1**

Course No	Course Title	Teaching Schedule			Marks For Sessionals	Marks for End Term Examination		TOTAL MARKS	CREDITS	COURSE TYPE
		L	P	TOTAL		THEORY	PRACTICAL			
HAS-101	Physics-I	4	0	4	40	60	-	100	4	BSC
HAS-103	Mathematics-I	4	0	4	40	60	-	100	4	
HAS-105	Chemistry	4	0	4	40	60	-	100	4	
HAS-109	Physics Lab-I	0	2	2	30	-	20	50	1	
HAS 114	Chemistry Lab	0	2	2	30	-	20	50	1	
MGMT-101	Fundamentals of Management	4	0	4	40	60	-	100	4	AEC
HAS-107	Environmental Studies	4	0	4	40	60	-	100	4	
E-101	Elements of Electronics Engineering	4	0	4	40	60	-	100	4	BEC
MU-101	Basics of Mechanical Engineering	4	0	4	40	60	-	100	4	
MU-102	Basics of Mechanical Engineering Lab	0	2	2	30	-	20	50	1	
MU- 104	Workshop-I	0	8	8	60	-	40	100	4	
	<b>Total</b>	<b>28</b>	<b>14</b>	<b>42</b>	<b>430</b>	<b>420</b>	<b>100</b>	<b>950</b>	<b>35</b>	

**Note: Exam duration will be as under**

- (a) Theory exams will be of 3 hours duration**
- (b) Practical exams will be of 3 hours duration**



**YMCA University of Science and Technology, Faridabad**  
**B.Tech (Computer Engineering)**  
**Scheme of Studies / Examination**

**Semester – 2**

Course No	Course Title	Teaching Schedule			Sessional Marks	Marks for End Term Examination		TOTAL MARKS	CREDIT S	
		L	P	TOTAL		THEORY	PRACTICAL			
HAS-102	Physics-II	4	0	4	40	60	-	100	4	BSC
HAS-104	Mathematics-II	4	0	4	40	60	-	100	4	
HAS-110	Physics Lab-II	0	2	2	30	-	20	50	1	
HAS-111	Essentials of Communication	4	0	4	40	60	-	100	4	AEC
HAS-112	Language lab	0	2	2	30	-	20	50	1	
E-105	Electrical Technology	4	0	4	40	60	-	100	4	BEC
CE-101	Fundamentals of Computer & Programming with C	4	0	4	40	60	-	100	4	
MU-103	Engineering Drawing	0	4	4	60	40	-	100	2	
CE-103	Fundamentals of Computer & Programming with C Lab	0	2	2	30	-	20	50	1	
E-109	Electrical Technology Lab	0	2	2	30	-	20	50	1	
MU-105	Workshop- II	0	8	8	60	-	40	100	4	
	Total	20	20	40	440	340	120	900	30	

**Note: Exam duration will be as under**

**(a) Theory exams will be of 3 hours duration**

**(b) Practical exams will be of 3 hours duration**



**YMCA University of Science and Technology, Faridabad**  
**B.Tech (Computer Engineering)**  
**Scheme of Studies / Examination**

**Semester – 3**

Course Code	Course Title	Teaching Schedule				Sessional Marks	Marks for End Term Examination		Total Marks	Credits	Type of Course
		L	T	P	TOTAL		T	P			
CE-16-201	Data Structures using C	3	1	-	4	40	60	-	100	4	DCC
CE-16-203	Discrete Structures	4	-	-	4	40	60	-	100	4	
CE-16-205	Computer Networks	4	-	-	4	40	60	-	100	4	
CE-16-207	Digital Electronics & Computer Organization	4	-	-	4	40	60	-	100	4	
CE-16-209	Theory of Automata & Computation	3	1	-	4	40	60	-	100	4	
CE-16-211	Introduction to E-Commerce and ERP	4	-	-	4	40	60	-	100	4	
	Mandatory Audit Course 1	2		-	2	-	-	-	-	-	MAC
CE-16-213	Data Structures using C Lab	-		4	4	30	-	20	50	2	LABS
CE-16-215	Digital Electronics Lab	-		4	4	30	-	20	50	2	
CE-16-217	Software Tools Lab	-		4	4	30	-	20	50	2	
	<b>Total</b>	<b>24</b>	<b>2</b>	<b>12</b>	<b>38</b>	<b>330</b>	<b>360</b>	<b>60</b>	<b>750</b>	<b>30</b>	

**Note: Exam duration will be as under**

**(a) Theory exams will be of 3 hours duration**

**(b) Practical exams will be of 3 hours duration**



**YMCA University of Science and Technology, Faridabad**  
**B.Tech (Computer Engineering)**  
**Scheme of Studies / Examination**

**Semester – 4**

Course No	Course Title	Teaching Schedule				Sessional Marks	Marks for End Term Examination		Total Marks	Credits	Type of Course
		L	T	P	TOTAL		Theory	Practical			
CE-16-202	Database Management System	3	1	-	4	40	60	-	100	4	DCC
CE-16-204	Analysis and Design of Algorithms	3	1	-	4	40	60	-	100	4	
CE-16-206	System Software Design	4	-	-	4	40	60	-	100	4	
CE-16-208	Object-Oriented Programming using C++	4	-	-	4	40	60	-	100	4	
CE-16-210	Microprocessor & Interfacing	4	-	-	4	40	60	-	100	4	
CE-16-212	Wireless Communication	4	-	-	4	40	60	-	100	4	
	Mandatory Audit Course-2	2		-	2	-	-	-	-	-	MAC
CE-16-214	DBMS Lab	-		4	4	30	-	20	50	2	LABS
CE-16-216	C++ Programming Lab	-		4	4	30	-	20	50	2	
CE-16-218	Microprocessor & Interfacing Lab	-		4	4	30	-	20	50	2	
	<b>Total</b>	<b>24</b>	<b>2</b>	<b>12</b>	<b>38</b>	<b>330</b>	<b>360</b>	<b>60</b>	<b>750</b>	<b>30</b>	

Initially the syllabus will be prescribed by the concerned teacher which will be a standard one and shall be taken from a credible reference such as reputed University/Institution.

**Note: Exam duration will be as under**

**(a) Theory exams will be of 3 hours duration**

**(b) Practical exams will be of 3 hours duration**



**YMCA University of Science and Technology, Faridabad**  
**B.Tech (Computer Engineering)**  
**Scheme of Studies / Examination**  
**Semester – 5**

Course No	Course Title	Teaching Schedule				Sessional Marks	Marks for End Term Examination		TOTAL MARKS	CREDITS	Type of Course
		L	T	P	TOTAL		Theory	Practical			
CE-16-301	Principles of Operating System	3	1	-	4	40	60	-	100	4	DCC
CE-16-303	Internet Fundamentals & Web Technology	4	-	-	4	40	60	-	100	4	
CE-16-305	Computer Graphics and Multimedia Technology	3	1	-	4	40	60	-	100	4	
CE-16-307	Core Java	4	-	-	4	40	60	-	100	4	
CE-16-309	Data Warehousing and Data Mining	4	-	-	4	40	60	-	100	4	
	Elective 1	3			3	40	60		100	3	DEC
CE-16-311	Operating System Lab	-		4	4	30	-	20	50	2	LABS
CE-16-313	Internet Fundamentals & Web Technology Lab	-		4	4	30	-	20	50	2	
CE-16-315	Computer Graphics and Multimedia Technology Lab	-		4	4	30	-	20	50	2	
CE-16-317	Core Java Lab	-		4	4	30	-	20	50	2	
	<b>Total</b>	21	2	16	39	360	360	80	800	31	

**Elective-I**

- CE-16-319            Distributed Operating System
- CE-16-321            Data Compression Techniques
- CE-16-323            Fuzzy Logic
- CE-16-325            Real Time System

**Note: Exam duration will be as under**

- (a) Theory exams will be of 3 hours duration**
- (b) Practical exams will be of 3 hours duration**



**YMCA University of Science and Technology, Faridabad**  
**B.Tech (Computer Engineering)**  
**Scheme of Studies / Examination**

**Semester – 6**

Course No	Course Title	Teaching Schedule				Marks Sessional	Marks for End Term Examination		TOTAL MARKS	CREDITS	TYPE OF COURSE
		L	T	P	TOTAL		Theory	Practical			
CE-16-302	Principles of Software Engineering	4	-	-	4	40	60	-	100	4	DCC
CE-16-304	Unix and Shell programming	4	-	-	4	40	60	-	100	4	
CE-16-306	Digital System Design	4	-	-	4	40	60	-	100	4	
CE-16-308	Cloud Computing	4	-	-	4	40	60	-	100	4	
	Elective II	3		-	3	40	60	-	100	3	DEC
	Open Elective Course-1	3		-	3	40	60	-	100	3	OEC
CE-16-324	Project	-		4	4	60		40	100	4	SEC
CE-16-310	Principles of Software Engineering Lab	-		4	4	30	-	20	50	2	LABS
CE-16-312	Unix & Shell Programming Lab	-		4	4	30	-	20	50	2	
CE-16-314	Digital System Design Lab	-		4	4	30	-	20	50	2	
	<b>Total</b>	<b>22</b>	<b>-</b>	<b>16</b>	<b>38</b>	<b>390</b>	<b>360</b>	<b>100</b>	<b>850</b>	<b>32</b>	



### **Elective II**

CE-16-316	Expert Systems
CE-16-318	Advance Client/Server Technology
CE-16-320	Neural Networks
CE-16-322	Natural Language Processing

### **Open Elective Course-I**

OEC-1	Intelligent Systems
OEC-2	Cyberlaws and Security
OEC-3	Soft Computing

**Note: Exam duration will be as under**

- (a) Theory exams will be of 3 hours duration**
- (b) Practical exams will be of 3 hours duration**



**YMCA University of Science and Technology, Faridabad  
B.TECH (COMPUTER ENGINEERING)  
SCHEME OF STUDIES/EXAMINATION**

**Semester-7**

Course No	Course Title	Teaching Schedule				Marks For Sessionals	Marks for End Term Examination		TOTAL MARKS	CREDITS	TYPE OF COURSE
		L	T	P	TOTAL		THEORY	PRACTICAL			
CE-16-401	Advanced Computer Architecture	4	-	-	4	40	60	-	100	4	DCC
CE-16-403	Security of Information Systems	4	-	-	4	40	60	-	100	4	
CE-16-405	Software Testing	4	-	-	4	40	60	-	100	4	
	Elective-III	3		-	3	40	60	-	100	3	DEC
	Elective-IV	3		-	3	40	60	-	100	3	
	Open Elective Course	3		-	3	40	60		100	3	OEC
CE-16-407	Seminar	-		2	2	50			50	2	
CE-16-409	Software Testing Lab	-		4	4	30		20	50	2	
	<b>Total</b>	<b>21</b>	<b>-</b>	<b>6</b>	<b>27</b>	<b>320</b>	<b>360</b>	<b>20</b>	<b>700</b>	<b>25</b>	

**Elective-III**

CE-16-411	Object-Oriented System Development
CE-16-413	Software Project Management
CE-16-415	Wireless Sensor Networks
CE-16-417	Logic and Functional Programming
CE-16-419	Android Application Development

**Elective –IV**

CE-16-421	Networking Programming & Administration
CE-16-423	Mobile Ad-hoc Networks



CE-16-425	Web Mining
CE-16-427	Agent Based Computing
CE-16-429	Internet of Things
CE-16-431	Semantic Web

### **Open Elective Course-II**

OEC-4	Web Technology and Information Retrieval
OEC-5	Intellectual Property Rights

**Note: Exam duration will be as under**

- (a) Theory exams will be of 3 hours duration**
- (b) Practical exams will be of 3 hours duration**



**YMCA University of Science and Technology, Faridabad**

**B.TECH (COMPUTER ENGINEERING)  
SCHEME OF STUDIES/EXAMINATION**

**Semester-8**

S. No.	Course No.	Subject	Teaching Schedule	Examination Schedule (Marks)		Total (Marks)	Credits
1	CE-16-402	Industrial Project Training	8 hours per day for one semester	200	300	500	12

Procedure for Annual Examination and continuous Assessment

**(A) Annual Exams Marks**

- |                       |           |
|-----------------------|-----------|
| 1. Project Evaluation | 50 Marks  |
| 2. Project Seminar    | 50 Marks  |
| 3. Project Viva       | 100 marks |

**(B) Continuous Assessment Marks**

- |                                    |           |
|------------------------------------|-----------|
| 1. Assessment by Institute faculty | 100 Marks |
| 2. Assessment by Industrial Guide  | 150 Marks |
| 3. Conduct Marks                   | 50 Marks  |

**Total 500 Marks**



## Open Elective Courses

Sr. No.	Name of the Subject	Code
1	Intelligent Systems	OEC-1
2	Cyber laws and Security	OEC-2
3	Soft Computing	OEC-3
4	Web Technology and Information Retrieval	OEC-4
5	Intellectual property rights	OEC-5

## Audit Courses

Sr. No.	Name of the subject	Code
1.	German-1	AUD-01
2.	German-2(With German-1 as prerequisite)	AUD-02
3.	French-1	AUD-03
4	French-2(With French-1 as prerequisite)	AUD-04
5	Sanskrit-1	AUD-05
6	Sanskrit-2(With Sanskrit-1 as prerequisite)	AUD-06
7	Personality Development	AUD-07
8	Interview and Group discussion skills	AUD-08
9	Yoga and Meditation	AUD-09
10	Art of living/Living Skills	AUD-10
11	Contribution of NSS towards Nation/role of NSS	AUD-11
12	Physical Education	AUD-12