

# **Walchand College of Engineering**

*(Government Aided Autonomous Institute)*

Vishrambag, Sangli. 416415



**Credit System for  
Final Year B.Tech. (Computer Science and Engineering)  
Sem-VII and VIII**

**2022-23**



# Walchand College of Engineering

(Government Aided Autonomous Institute)

## Credit System for Final Year B.Tech. (Computer Science and Engineering) Sem-VII AY 2022-23

Sr.No.	Category	Course Code	Course Name	L	T	P	I	Hrs	Cr	MSE/LA1	ISE/LA2	ESE	Ext
<b>Professional Core (Theory)</b>													
1	PC	5CS401	Cryptography and Network Security	3	0	0	0	3	3	30	20	50	
2	HS	5CS403	Humanities-4 Legal, IPR, Safety	1	0	0	0	1	1	15	10	25	
<b>Professional Core (Lab)</b>													
3	PC	5CS453	Cryptography and Network Security Laboratory	0	0	2	0	2	1	30	30	40	POE
4	PR	5CS454	Techno-Socio Activity	0	0	0	1	1	1	15	15	20	
5	PR	5CS491	Project-I	0	0	6	0	6	3	30	30	40	POE
6	HS	5CS455	Humanities-3 Project Management	0	0	0	1	1	1	15	15	20	
<b>Professional Elective (Theory)</b>													
7	PE	Refer list	Elective 5	3	0	0	0	3	3	30	20	50	
8	PE	Refer list	Elective 6	3	0	0	0	3	3	30	20	50	
<b>Professional Elective (Lab)</b>													
9	PC	Refer list	Elective 5 Lab	0	0	2	0	2	1	30	30	40	
<b>Open Elective</b>													
10	OE	Refer list	Open Elective-5	3	0	0	0	3	3	30	20	50	
<b>Total</b>				<b>13</b>	<b>0</b>	<b>10</b>	<b>2</b>	<b>25</b>	<b>20</b>				

**Notes:**

For Theory courses: There shall be MSE, ISE and ESE. The ESE is a separate head of passing.

For Lab courses: There shall be continuous assessment (LA1, LA2, ESE). The ESE is a separate head of passing. The Y in the PoE indicates external component for ESE.

Minimum two AICTE mandatory courses need to be completed for award of degree.

The contact hours of guide for Final Year BTech project are 4 hrs for Sem VII and 8 hours/week for Sem VIII, for 9 students.

**For further details, refer to Academic and Examination rules and regulations.**



# Walchand College of Engineering

(Government Aided Autonomous Institute)

## Elective Course List for Final Year B.Tech. (Computer Science and Engineering) Sem-VII AY 2022-23

Sr.No.	Track	Course Code	Course Name
<b>Elective 5 Lab</b>			
1	Computing	5CS451	High Performance Computing Lab
2	Computing	5CS452	Data Mining Lab
<b>Elective 5</b>			
1	Computing	5CS411	High Performance Computing
2	Computing	5CS412	Data Mining
<b>Elective 6</b>			
1	Computer Network & Security	5CS413	Software Defined Network
2	Image Processing	5CS414	Computer Vision
3	AI&ML	5CS415	MOOC Course on Reinforcement Learning



# Walchand College of Engineering

(Government Aided Autonomous Institute)

## Open Elective Course List for Final Year B.Tech. (Computer Science and Engineering) Sem-VII AY 2022-23

Sr.No.	Offering Dept	Sem	Course Code	Course Name
<b>Open Elective 5</b>				
1	Civil	7	5OE415	Management for Engineers
2	Mech	7	5OE429	Industrial Automation
3	Civil	7	5OE415	Management for Engineers
4	Eln	7	5OE457	Medical Image Processing
5	Mech	7	5OE429	Industrial Automation
6	Eln	7	5OE457	Medical Image Processing



# Walchand College of Engineering

(Government Aided Autonomous Institute)

## Credit System for Final Year B.Tech. (Computer Science and Engineering) Sem-VIII AY 2022-23

Sr.No.	Category	Course Code	Course Name	L	T	P	I	Hrs	Cr	MSE/LA1	ISE/LA2	ESE	Ext	
<b>Professional Core (Theory)</b>														
1	PC	5CS421	Data Management, Protection and Governance	3	0	0	0	3	3	30	20	50		
<b>Professional Core (Lab)</b>														
2	PR	5CS492	Project-II	0	0	12	0	12	6	30	30	40	POE	
<b>Professional Elective (Theory)</b>														
3	PE	Refer list	Elective 7	3	0	0	0	3	3	30	20	50		
4	PE	Refer list	Elective 8	3	0	0	0	3	3	30	20	50		
5	PE	Refer list	Elective 9	3	0	0	0	3	3	30	20	50		
<b>AICTE Mandatory Courses</b>														
6	MC	5IC401	Constitution of India	2	0	0	0	2	0	30	20	50		
<b>Total</b>				<b>14</b>	<b>0</b>	<b>12</b>	<b>0</b>	<b>26</b>	<b>18</b>					

### Notes:

For Theory courses: There shall be MSE, ISE and ESE. The ESE is a separate head of passing.

For Lab courses: There shall be continuous assessment (LA1, LA2, ESE). The ESE is a separate head of passing. The Y in the PoE indicates external component for ESE.

Minimum two AICTE mandatory courses need to be completed for award of degree.

The contact hours of guide for Final Year BTech project are 4 hrs for Sem VII and 8 hours/week for Sem VIII, for 9 students.

**For further details, refer to Academic and Examination rules and regulations.**



# Walchand College of Engineering

(Government Aided Autonomous Institute)

## Elective Course List for Final Year B.Tech. (Computer Science and Engineering) Sem-VIII AY 2022-23

Sr.No.	Track	Course Code	Course Name
<b>Elective 7</b>			
1	AI&ML	5CS431	Search Engine Design and Optimization
2	Computer Network & Security	5CS432	Computer Forensic
<b>Elective 8</b>			
1	AI&ML	5CS433	Human Computer Interaction
2	AI&ML	5CS434	MOOC Course on Social Networks
3	Image Processing	5CS435	MOOC Course on Virtual Reality
4	Computer Network & Security	5CS436	MOOC Course on Blockchain and its Applications
5	Computing	5CS437	MOOC Course on Introduction to parallel programming with OpenMP and MP
<b>Elective 9</b>			
1	AI&ML	5CS438	Advanced Machine Learning
2	Computing	5CS439	Big Data Computing



# Walchand College of Engineering

(Government Aided Autonomous Institute)

## Tracks and Semester-wise Elective Courses for B.Tech. (Computer Science and Engineering) AY 2022-23

Sr.No.	Sem	Elective	Course Code	Course Name
<b>AI&amp;ML</b>				
1	5	Elective 1	5CS312	Artificial Intelligence and Machine Learning
2	5	Elective 2 Lab	5CS354	Artificial Intelligence and Machine Learning Lab
3	6	Elective 3	5CS333	Deep Learning
4	6	Elective 3	5CS334	Soft Computing
5	7	Elective 6	5CS415	MOOC Course on Reinforcement Learning
6	8	Elective 7	5CS431	Search Engine Design and Optimization
7	8	Elective 8	5CS433	Human Computer Interaction
8	8	Elective 8	5CS434	MOOC Course on Social Networks
9	8	Elective 9	5CS438	Advanced Machine Learning
<b>Computer Network &amp; Security</b>				
1	5	Elective 1	5CS313	Internet (Web) of Things
2	5	Elective 2 Lab	5CS355	Internet (Web) of Things Lab
3	6	Elective 3	5CS332	Advanced Computer Network
4	6	Elective 4 Lab	5CS373	Advanced Web and Mobile Application Development Lab
5	7	Elective 6	5CS413	Software Defined Network
6	8	Elective 7	5CS432	Computer Forensic
7	8	Elective 8	5CS436	MOOC Course on Blockchain and its Applications

(Continued..)



# Walchand College of Engineering

(Government Aided Autonomous Institute)

## Tracks and Semester-wise Elective Courses for B.Tech. (Computer Science and Engineering) AY 2022-23

Sr.No.	Sem	Elective	Course Code	Course Name
<b>Computing</b>				
1	5	Elective 1	5CS316	MOOC course on Introduction to Game Theory and Mechanism Design
2	5	Elective 2 Lab	5CS358	Introduction to Game Theory and Mechanism Design Lab
3	6	Elective 4 Lab	5CS372	Software Engineering Tools Lab
4	7	Elective 5	5CS411	High Performance Computing
5	7	Elective 5	5CS412	Data Mining
6	7	Elective 5 Lab	5CS451	High Performance Computing Lab
7	7	Elective 5 Lab	5CS452	Data Mining Lab
8	8	Elective 8	5CS437	MOOC Course on Introduction to parallel programming with OpenMP and MP
9	8	Elective 9	5CS439	Big Data Computing
<b>Image Processing</b>				
1	5	Elective 1	5CS311	Image Processing
2	5	Elective 1	5CS314	Computer Graphics
3	5	Elective 2 Lab	5CS353	Image Processing Lab
4	5	Elective 2 Lab	5CS356	Computer Graphics Lab
5	6	Elective 3	5CS331	Remote Sensing and Geographic Information System
6	7	Elective 6	5CS414	Computer Vision
7	8	Elective 8	5CS435	MOOC Course on Virtual Reality





# Walchand College of Engineering

(Government Aided Autonomous Institute)

## List of Professional Core (Theory) Courses for B.Tech. (Computer Sc. and Engg.) AY 2022-23

Sr.No.	Sem	Course Code	Course Name
<b>Professional Core (Theory) Courses</b>			
1	1	6PH101	Engineering Physics
2	1	6MA101	Engineering Mathematics-I
3	1	6CV101	Engineering Mechanics
4	1	6HS101	Communication Skills
5	1	6BS104	Life Science
6	2	6CH101	Engineering Chemistry
7	2	6MA102	Engineering Mathematics-II
8	2	6ME101	Engineering Graphics and CAD
9	2	6EL101	Basic Electrical Engineering
10	2	6EN101	Basic Electronics Engineering
11	3	6MA202	Probability and Statistics
12	3	6CS201	Discrete Mathematics
13	3	6CS202	Data Structures
14	3	6CS203	Data Communication
15	3	6CS204	Computer Organization and Architecture
16	3	6CS205	Software Engineering
17	4	6CS225	Applied Mathematics for Computer Science and Engineering
18	4	6CS221	Formal Language and Automata Theory
19	4	6CS222	Operating Systems
20	4	6CS223	Database Engineering
21	4	6CS224	Computer Network
22	5	5CS301	Compiler Design
23	5	5CS302	Design and Analysis of Algorithms
24	6	5CS321	Cloud Computing
25	6	5CS322	Advanced Database System
26	7	5CS401	Cryptography and Network Security
27	7	5CS403	Humanities-4 Legal, IPR, Safety
28	8	5CS421	Data Management, Protection and Governance



# Walchand College of Engineering

(Government Aided Autonomous Institute)

## List of Professional Core (Lab) Courses for B.Tech. (Computer Sc. and Engg.) AY 2022-23

Sr.No.	Sem	Course Code	Course Name
<b>Professional Core (Lab) Courses</b>			
1	1	6CV151	Engineering Mechanics Lab
2	1	6ME152	Workshop Practice
3	1	6CS151	Programming for Problem Solving Lab
4	1	6PH151	Engineering Physics Lab
5	2	6ME151	Engineering Graphics and CAD Lab
6	2	6EL151	Basic Electrical Engineering Lab
7	2	6CH151	Engineering Chemistry Lab
8	2	6EN151	Basic Electronics Engineering Lab
9	3	6CS251	Programming Lab 1
10	3	6CS252	Data Structures Lab
11	3	6CS254	Computer Organization and Architecture Lab
12	4	6CS274	Database Engineering Lab
13	4	6CS275	Computer Network Lab
14	4	6CS271	Programming Lab 2
15	4	6CS277	Presentation and Report Writing
16	5	5CS351	Design and Analysis of Algorithms Lab
17	5	5CS352	Programming Lab 3
18	5	5CS345	Mini-Project-1
19	5	5CS346	Mini-Project-2
20	5	5HS302	Humanities-1: Human Relations at Work
21	6	5CS371	Advanced Database System Lab
22	6	5CS347	Mini-Project-3
23	6	5CS348	Mini-Project-4
24	6	5HS301	Humanities-2: German Language
25	7	5CS453	Cryptography and Network Security Laboratory
26	7	5CS454	Techno-Socio Activity
27	7	5CS491	Project-I
28	7	5CS455	Humanities-3 Project Management
29	8	5CS492	Project-II



# Walchand College of Engineering

(Government Aided Autonomous Institute)

## Open Electives offered by B.Tech. (Computer Sc. and Engg.) to other programmes AY 2022-23

Sr.No.	Offering Dept	Sem	Course Code	Course Name
<b>Open Electives Offered</b>				
1	CSE	5	5OE372	Data Science using Python
2	CSE	5	5OE371	Software Engineering and Database Essentials
3	CSE	6	5OE378	Fundamentals of Internet of Things
4	CSE	6	5OE379	Artificial Intelligence and Machine Learning
5	CSE	7	5OE471	Cyber Security
6	CSE	5	5OE372	Data Science using Python
7	CSE	5	5OE371	Software Engineering and Database Essentials
8	CSE	6	5OE378	Fundamentals of Internet of Things
9	CSE	6	5OE379	Artificial Intelligence and Machine Learning
10	CSE	7	5OE471	Cyber Security



# Walchand College of Engineering

(Government Aided Autonomous Institute)

## Open Electives available from other programmes to B.Tech. (Computer Sc. and Engg.) AY 2022-23

Sr.No.	Offering Dept	Sem	Course Code	Course Name
<b>Open Electives Available</b>				
1	Civil	5	5OE301	Basic Civil Engineering
2	Civil	5	5OE315	Application of Remote Sensing
3	Civil	6	5OE322	Physical Geology
4	Civil	6	5OE323	Diaster Management
5	Civil	7	5OE415	Management for Engineers
6	Mech	5	5OE330	Energy Engineering
7	Mech	5	5OE329	Non-conventional Machining Processes
8	Mech	6	5OE336	3D Printing
9	Mech	6	5OE337	Basics of Automobile Engineering
10	Mech	7	5OE429	Industrial Automation
11	Elect	5	5OE343	Electrical Machine Technology
12	Civil	5	5OE301	Basic Civil Engineering
13	Eln	5	5OE356	Signals and Systems
14	Civil	5	5OE315	Application of Remote Sensing
15	Eln	5	5OE357	Introduction to Electronics system
16	Civil	6	5OE322	Physical Geology
17	Eln	6	5OE364	Cyber Physical System
18	Civil	6	5OE323	Diaster Management
19	Eln	6	5OE365	Biomedical Engineering
20	Civil	7	5OE415	Management for Engineers
21	Eln	7	5OE457	Medical Image Processing
22	Mech	5	5OE330	Energy Engineering
23	Mech	5	5OE329	Non-conventional Machining Processes
24	Mech	6	5OE336	3D Printing
25	Mech	6	5OE337	Basics of Automobile Engineering
26	Mech	7	5OE429	Industrial Automation
27	Elect	5	5OE343	Electrical Machine Technology
28	Eln	5	5OE356	Signals and Systems
29	Eln	5	5OE357	Introduction to Electronics system
30	Eln	6	5OE364	Cyber Physical System
31	Eln	6	5OE365	Biomedical Engineering
32	Eln	7	5OE457	Medical Image Processing