

Walchand College of Engineering

(Government Aided Autonomous Institute)

Vishrambag, Sangli. 416415



***** Platinum Jubilee Year *****

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

2021-22



Walchand College of Engineering, Sangli

(Government Aided Autonomous Institute)

Credit System for Final Year B.Tech. (Computer Science and Engineering) Sem-VII AY 2021-22

Sr.No.	Category	Course Code	Course Name	L	T	P	I	Hrs	Cr	T1/LA1	T2/LA2	ESE
Professional Core (Theory)												
1	PC		Cryptography and Network Security	3	0	0	0	3	3	20	20	60
Professional Core (Lab)												
2	PC		Cryptography and Network Security Lab	0	0	2	0	2	1	30	30	40
3	PR		Project-1 and Seminar	0	0	6	0	6	3	30	30	40
Professional Elective (Theory)												
4	PE	Refer list	Elective 3	3	0	0	0	3	3	20	20	60
5	PE	Refer list	Elective 4	3	0	0	0	3	3	20	20	60
Professional Elective (Lab)												
6	PE	Refer list	Elective 2 Lab	0	0	2	0	2	1	30	30	40
Open Elective												
7	OE	Refer list	Open Elective-3	3	0	0	0	3	3	20	20	60
Value Added Professional Courses #												
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Value Added Life-Skill Courses #												
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Total				12	0	10	0	22	17			



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Elective Course List for Final Year B.Tech. (Computer Science and Engineering) Sem-VII AY 2021-22

Sr.No.	Track	Course Code	Course Name
Elective 2 Lab			
1	Computing		High Performance Computing Lab
2	Computing		Data Mining Lab
Elective 3			
1	Computing		High Performance Computing
2	Computing		Data Mining
Elective 4			
1	Computer Network and Security		Software Defined Network
2	AI and ML		Advanced Machine Learning
3	AI and ML		Intelligent Systems
4	Computing		Data Management, Protection and Governance



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Open Elective Course List for Final Year B.Tech. (Computer Science and Engineering) Sem-VII AY 2021-22

Sr.No.	Offering Dept	Sem	Course Code	Course Name
Open Elective 3				
1	Civil	7		Management for Engineers
2	Mech	7		Automobile Engineering
3	Mech	7		Industrial Automation
4	Mech	7		Aerospace Engineering
5	Eln	7		Medical Image Processing

Notes:

For Lab courses: There shall be only internal continuous assessment (LA1, LA2, ESE). LA1 and LA2 together shall be Lab ISE. The ESE is a separate head of passing.

For Theory courses: There shall be two tests (T1 and T2) and one ESE. The ESE is a separate head of passing.

The Value Added Courses are Optional Courses. The mode of teaching (LTPI) is decided by the resource person.

The credits earned from these courses will be shown on grade card. For SGPA and CGPA calculation, these courses will be excluded.

The list of Value added courses will be updated from time to time. The courses may be on paid basis. These courses will be offered as per availability of faculty.

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

The contact hours of each Final Year BTech project batch (of min 5 students) with the guide shall be 1 hour/week for Sem VII and 2 hours/week for Sem VIII.

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



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Credit System for Final Year B.Tech. (Computer Science and Engineering) Sem-VIII AY 2021-22

Sr.No.	Category	Course Code	Course Name	L	T	P	I	Hrs	Cr	T1/LA1	T2/LA2	ESE
Professional Core (Theory)												
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Professional Core (Lab)												
1	PR		Summer Internship	0	0	0	1	1	1	30	30	40
2	PR		Techno-Socio Outreach	0	0	0	1	1	1	30	30	40
3	PR		Project-2	0	0	16	0	16	8	30	30	40
Professional Elective (Theory)												
4	PE	Refer list	Elective 5	3	0	0	0	3	3	20	20	60
5	PE	Refer list	Elective 6	3	0	0	0	3	3	20	20	60
AICTE Mandatory Courses @												
6	MC		Constitution of India	2	0	0	0	2	0	20	20	60
Value Added Professional Courses #												
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Value Added Life-Skill Courses #												
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Total				8	0	16	2	26	16			



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Elective Course List for Final Year B.Tech. (Computer Science and Engineering) Sem-VIII AY 2021-22

Sr.No.	Track	Course Code	Course Name
Elective 5			
1	Computer Network and Security		Computer Forensic
2	AI and ML		Search Engine Design and Optimization
Elective 6			
1	AI and ML		Human Computer Interaction
2	AI and ML		MOOC on Social Networks

Notes:

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Tracks and Semester-wise Elective Courses for B.Tech. (Computer Science and Engineering) AY 2021-22

Sr.No.	Sem	Elective	Course Code	Course Name
AI and ML				
1	5	Elective 1		Artificial Intelligence and Machine Learning
2	5	Elective 2 Lab		Artificial Intelligence and Machine Learning Lab
3	6	Elective 3		Deep Learning
4	6	Elective 3		Soft Computing
5	7	Elective 4		Advanced Machine Learning
6	7	Elective 4		Intelligent Systems
7	8	Elective 5		Search Engine Design and Optimization
8	8	Elective 6		Human Computer Interaction
9	8	Elective 6		MOOC on Social Networks
Computer Network and Security				
1	5	Elective 1		Internet (Web) of Things
2	5	Elective 2 Lab		Internet (Web) of Things Lab
3	6	Elective 3		Advanced Computer Network
4	6	Elective 4 Lab		Advanced Web and Mobile Application Development Lab
5	7	Elective 4		Software Defined Network
6	8	Elective 5		Computer Forensic
Computing				
1	5	Elective 1		MOOC on Parallel Programming
2	5	Elective 2 Lab		Parallel Programming Lab
3	6	Elective 4 Lab		Software Engineering Tools Lab
4	7	Elective 3		High Performance Computing
5	7	Elective 3		Data Mining
6	7	Elective 4		Data Management, Protection and Governance
7	7	Elective 2 Lab		High Performance Computing Lab
8	7	Elective 2 Lab		Data Mining Lab

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Tracks and Semester-wise Elective Courses for B.Tech. (Computer Science and Engineering) AY 2021-22

Sr.No.	Sem	Elective	Course Code	Course Name
Image Processing				
1	5	Elective 1		Image Processing
2	5	Elective 1		Computer Graphics
3	5	Elective 2 Lab		Image Processing Lab
4	5	Elective 2 Lab		Computer Graphics Lab
5	6	Elective 3		Remote Sensing and Geographic Information System



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Mapping between Courses and GATE Topics for B.Tech. (Computer Science and Engineering) AY 2021-22

Sr.No.	Sem	Course Code	Course Name	GATE Mapping
GATE Mapping				
1	1	5MA101	Engineering Mathematics-I	Matrices, Calculus
2	1	5CS101	Programming for Problem Solving	Expressions, Branch, Loops, Arrays, Fun, Recursion, Pointers, Struct, Union
3	1	5CS151	Programming for Problem Solving Lab	Expressions, Branch, Loops, Arrays, Fun, Recursion, Pointers, Struct, Union
4	2	5MA102	Engineering Mathematics-II	Probability Theory, Probability Distribution
5	3	5CS202	Discrete Mathematics	Logic & Sets, Relations, Functions, Groups, Graphs, Combinatorics
6	3	5CS203	Data Structures	Stacks, Queues, Linked Lists, Trees, BST, Binary Heaps, Graphs
7	3	5CS204	Data Communication	Encoding Techniques, Congestion Control, Flow Control, Layering
8	3	5CS205	Computer Organization and Architecture	Boolean algebra, Circuits, Minimization, Comp Arithmetic, M/c Instrs, AM,
9	4	5CS222	Formal Language and Automata Theory	Regular Expn and FA, CFG, PDA, RFL and CFL, PL, TM, Undecidability.
10	4	5CS223	Operating Systems	Processes, Threads, IPC, Concurrency, Synchronization, Deadlock, Scheduling,
11	4	5CS224	Database Engineering	Modelling, R Algebra, Tuple Calculus, SQL, NF, Indexing, Transactions,
12	4	5CS225	Computer Network	IPv4/IPv6, Routers and Algorithms, TCP/UDP, Sockets, Application Layer
13	5		Compiler Design	LA, Parsing, SDT, Runtime Envts, Intermediate CG
14	5		Design and Analysis of Algorithms	Search, Sort, Hashing, Complexity, Algo Desn Techq, MST, Shortest Paths
15	6		Elective 3	Security (in ACN)
16	7		Cryptography and Network Security	Nw Sec, Authentication, Public-Private Key Cryptography, DS & Cert, Firewa



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List of Professional Core (Theory) Courses for B.Tech. (Computer Science and Engineering) AY 2021-22

Sr.No.	Sem	Course Code	Course Name
Professional Core (Theory) Courses			
1	1	5PH101	Engineering Physics
2	1	5MA101	Engineering Mathematics-I
3	1	5CV101	Engineering Mechanics
4	1	5HS101	Communication Skills
5	1	5CS101	Programming for Problem Solving
6	2	5CH101	Engineering Chemistry
7	2	5MA102	Engineering Mathematics-II
8	2	5ME101	Engineering Graphics and CAD
9	2	5EL101	Basic Electrical Engineering
10	2	5EN101	Arduino Based Systems
11	2	5BS104	Life Science
12	3	5MA201	Probability and Statistics
13	3	5CS202	Discrete Mathematics
14	3	5CS203	Data Structures
15	3	5CS204	Data Communication
16	3	5CS205	Computer Organization and Architecture
17	3	5CS206	Software Engineering
18	4	5CS221	Applied Mathematics for Computer Science and Engineering
19	4	5CS222	Formal Language and Automata Theory
20	4	5CS223	Operating Systems
21	4	5CS224	Database Engineering
22	4	5CS225	Computer Network
23	5		Compiler Design
24	5		Design and Analysis of Algorithms
25	6		Cloud Computing
26	6		Advanced Database System
27	7		Cryptography and Network Security



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List of Professional Core (Lab) Courses for B.Tech. (Computer Science and Engineering) AY 2021-22

Sr.No.	Sem	Course Code	Course Name
Professional Core (Lab) Courses			
1	1	5CV151	Engineering Mechanics Lab
2	1	5ME152	Workshop Practice
3	1	5CS151	Programming for Problem Solving Lab
4	1	5PH151	Engineering Physics Lab
5	2	5ME151	Engineering Graphics and CAD Lab
6	2	5EL151	Basic Electrical Engineering Lab
7	2	5CH151	Engineering Chemistry Lab
8	2	5EN151	Arduino Based Systems Lab
9	3	5CS251	Programming Lab 1
10	3	5CS253	Data Structures Lab
11	3	5CS255	Computer Organization and Architecture Lab
12	4	5CS274	Database Engineering Lab
13	4	5CS275	Computer Network Lab
14	4	5CS276	Programming Lab 2
15	4	5CS277	Presentation and Report Writing
16	5		Design and Analysis of Algorithms Lab
17	5		Programming Lab 3
18	5		Mini-Project-1
19	5		Mini-Project-2
20	5		Humanities-1: Human Relations at Work
21	6		Advanced Database System Lab
22	6		Mini-Project-3
23	6		Mini-Project-4
24	6		Humanities-2: German Language
25	7		Cryptography and Network Security Lab
26	7		Project-1 and Seminar
27	8		Summer Internship
28	8		Techno-Socio Outreach
29	8		Project-2



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Open Electives offered by B.Tech. (Computer Science and Engineering) to other programmes AY 2021-22

Sr.No.	Offering Dept	Sem	Course Code	Course Name
Open Electives Offered				
1	CSE	5		Data Science using Python
2	CSE	5		Software Engineering and Database Essentials
3	CSE	6		Fundamentals of Internet of Things
4	CSE	6		Artificial Intelligence and Machine Learning
5	CSE	7		Cyber Security



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Open Electives available from other programmes to B.Tech. (Computer Science and Engineering) AY 2021-22

Sr.No.	Offering Dept	Sem	Course Code	Course Name
Open Electives Available				
1	Civil	5		Basic Civil Engineering
2	Civil	5		Application of Remote Sensing
3	Civil	6		Physical Geology
4	Civil	6		Diaster Management
5	Civil	7		Management for Engineers
6	Mech	5		Energy Engineering
7	Mech	5		Non-conventional Machining Processes
8	Mech	6		3D Printing
9	Mech	6		Basics of Automobile Engineering
10	Mech	7		Automobile Engineering
11	Mech	7		Industrial Automation
12	Mech	7		Aerospace Engineering
13	Elect	5		Electrical Machine Technology
14	Eln	5		Signals and Systems
15	Eln	5		Introduction to Electronics system
16	Eln	6		Cyber Physical System
17	Eln	6		Biomedical Engineering
18	Eln	7		Medical Image Processing