The ICFAI University, Dehradun
ICFAI Tech School
Minutes of Meeting of Board of Studies (BoS)

Date: February 09, 2022

The meeting of Board of Studies (BoS) for UG programs was held on Friday 09, 2022 online. The Following members were present at the meeting:

1. Prof. (Dr.) Ram Karan Singh (Vice Chancellor, IUD) — Chairman
2. Dr. Sandeep Kumar Panda (Associate Professor, IFHE Hyderabad) — External Member (Online)
3. Dr. Arun Kumar Saini (Associate Professor and Dean IcfaiTech Jaipur) — External Member (Online)
4. Dr. Chandrashekhar Akula (Asst. Professor, IFHE Hyderabad) — External Member (Online)
5. Dr. Rakesh Pandey (Asst. Professor, Government Degree College Someshwar, Department Higher Education Uttarakhand) — External Member (Online)
6. Mr. Manpreet Singh (Assistant Vice President, Genpact Technologies, India) — External Member (Online)
7. Prof. G F Chakravarthi (In-charge, ITS) — Member
8. Dr. Sanjeev Kumar (Academic Coordinator, Asst. Prof CSE) — Member
9. Prof. Amit Das (Asst. Professor, CSE) — Member
10. Dr. T K Mandal (Associate Professor, Chemistry) — Member
11. Dr. Mukul Jain (Asst. Professor, Mathematics) — Member
12. Dr. Gaurav Bhandari (Asst. Professor, ECE & Mecha) — Member
13. Prof. Amit Kumar Bera (IQAC and Asst. Professor, Civil) — Member

The Chairman (Honorable Vice Chancellor, The ICFAI University, Dehradun) welcomed the board members and put the meeting to order. He explained that the purpose of this meeting is to develop the program structure and syllabi for B.Tech (CSE, DS & AI, Mechatronics, ECE, Mechanical and Civil Engineering) (4 Years) , BSc. Data Science, and B.Sc. Mathematics (3 Years) programs of ICFAI Tech School, The ICFAI University, Dehradun as these are proposed

to be introduced w.e.f. Second onwards Batch 2021-2025, and Right first semester onwards Batch 2022-26.

Agenda and Resolution:

The BoS members had a detailed discussion on fitting the subjects in respective program wise structures and syllabi of all the B.Tech, BSc. (DS) and B.Sc. Mathematics Programs.

The BoS members suggested following points for the further refinement of B.Tech (Computer Science & Engineering) General Program Structure (Batch 2021-25) as follows:

1. The subject "Electrical Science I" to be renamed as "Introduction to Electrical and Electronics Sciences"
2. The subject Discrete Mathematics to be shifted to 4th semester and the subject Humanities Elective I to be shifted to semester III.
3. The practical component of Machine Learning and Cloud Computing subjects to be framed & delivered according to industry trends.
4. The subject Elective (Core) of semester V and VII to retitled as Open Elective [student can register with NPTEL / other discipline subject the students has completed the Prerequisite subjects for that particular subject.]

The above points are considered and the general scheme of the program is updated accordingly

Updated - B.Tech. (Computer Science and Engineering) Program General Structure (2021-25 Second Year onwards)

Year	Course Code	Semester-I	L	P	U	Course Code	Semester-II	L	P	U
		Chemistry	3	0	3		Thermodynamics	3	0	3
		English Language Skills	3	0	3		Probability & Statistics	3	0	3
		Linear Algebra	3	0	3		Higher Calculus	3	0	3
		Physics I	3	0	3		Physics II	3	0	3

I		Engineering Graphics	2	4	4		Scientific Measurements	0	4	2
		Computer Programming I	3	0	3		Digital Fabrication	2	4	4
		Environmental Science	2	0	2		Computer Programming II	3	0	3
	Total No of Credits				**21**	**Total No of Credits**				**21**
II	**Semester-III**					**Semester-IV**				
		Introduction to Electrical & Electronics Sciences	3	2	4		Digital Signal Processing	3	0	3
		Introduction to Data Science and AI	2	2	3		Computer Organization and Architecture	3	0	3
		Design and Analysis of Algorithms	3	0	3		Professional Communication	3	0	3
		Principles of Managerial Economics	3	0	3		Web Enabled Technologies	3	0	3
		Data Structures	2	2	3		Data Science	3	0	3
		Differential Equations & Fourier Series	3	0	3		Database Management Systems	3	2	4
		Humanities Elective 1	3	0	3		Discrete Mathematics	3	0	3
		CRT	0	2	1		CRT	0	2	1
	Total No of Credits				**23**	**Total No of Credits**				**23**
SUMMER INTERNSHIP PROGRAM I (for Internship option only)										**5**
III	**Semester-V**					**Semester-VI**				
		Principle of Cryptography	3	0	3		Open Elective	3	0	3
		Operating Systems	3	2	4		Computer Networks	3	2	4
		Theory of Computation	3	0	3		Big Data Systems	3	0	3
		Machine Learning	3	2	4		Cloud Computing	3	2	4
		Software Engineering	3	0	3		Programming Language and Compile Construction	3	0	3
		Blockchain Technology	3	0	3		Computer Vision	3	0	3
		Open Elective	3	0	3		Special Project/TIP/Capstone Project	0	6	3
		Audit Course	0	0	0					
		CRT	0	2	1					
	Total No of Credits				**24**	**Total No of Credits**				**23**
IV	**Semester-VII**					**Semester-VIII**				
		Internship Program II /					Internship Program II /			
		Thesis & Seminar /					Thesis & Seminar /			
		Electives (4) + Professional/Discipline	18				Electives (4) + Professional/Discipline	18		
		Humanities Elective (1) (Digital Humanities)					Humanities Elective (1) (Digital Humanities)			
	Total No of Credits				**20/18**	**Total No of Credits**				**20/18**
Total No of Credits										**178**

Discipline Elective I (V and VI Semester)

Course Code	Course Title	L	P	U
	Advanced Java	3	0	3
	Advanced Computer Architecture	3	0	3
	Soft Computing	3	0	3
Discipline Elective I (VI Semester)				
	Social Network Analysis	3	0	3
	Real Time Systems	3	0	3
	Human Computer Interface	3	0	3
	Combinatorial Optimization	3	0	3

Specialization Electives (VII/VIII Semester)

Machine Learning				
Course Code	**Course Title**	**L**	**P**	**U**
CS404	Deep Learning	3	0	3
CS405	Natural Language Processing	3	0	3
CS406	Information retrival	3	0	3
CS407	Pattern Recognition	3	0	3

Cyber Security				
Course Code	**Course Title**	**L**	**P**	**U**
CS404	Ethical Hacking	3	0	3
CS405	Information Security	3	0	3
CS406	IoT Security	3	0	3
CS407	Cyber Security	3	0	3

Networks				
Course Code	**Course Title**	**L**	**P**	**U**
CS404	Wireless Networks	3	0	3
CS405	Network Administration	3	0	3
CS406	Network Security	3	0	3
CS407	AI in Wireless Communications	3	0	3

Advanced Computing				
Course Code	**Course Title**	**L**	**P**	**U**
CS404	High Performance Computing	3	0	3
CS405	Advanced Computer Architecture	3	0	3
CS406	Multicore Architecture	3	0	3
CS407	Parallel Computing	3	0	3

Database				
Course Code	**Course Title**	**L**	**P**	**U**
CS401	Database Administration	3	0	3
CS402	SQL & DB Applications	3	0	3
CS403	Database Security & Privacy	3	0	3
CS404	Data Wrangling	3	0	3

The BoS members suggested following points for the further refinement of B.Tech (Computer Science & Engineering) General Program Structure (Batch 2022-26) as follows:

1. In Semester I, the subject "Basis of Electrical Science and Electronics/ Basics of Electronics " to be renamed as "Introduction to Electrical and Electronics Sciences"
2. In Semester I, the subject "Computer Programming I " to be renamed as "Computer Programming"
3. The subject "Chemistry for Engineers" to be renamed as "Chemistry".
4. The subject "Engineering Physics" to be renamed as "Physics".
5. The subject "Physics" to be shifted to 2nd semester and the subject Chemistry to be shifted to semester I.
6. In Semester II the subject "Environment Sciences" name should be renamed as "Environment Sciences & SDGs" [Sustainable Development Goals (SDGs)]
7. In Semester III, Subject MOOC (Python Programming) to be renamed as MOOC (Python Programming/ Julia Programming)

The above points are considered and the general scheme of the program is updated accordingly

Updated- B.Tech (Computer Science & Engineering) Program

General Structure (2022-26)

Year	Course Code	Semester-I	L	P	U	Course Code	Semester-II	L	P	U
I		Mathematics-I	3	0	3		Mathematics-II	3	0	3
		English Language Skills	2	2	3		Physics	3	2	4
		Introduction to Electrical and Electronics Sciences	3	2	4		Environment Sciences & SDGs	2	0	2
		Chemistry	3	2	4		Digital Signal Processing	2	2	3
		Introduction to AI & DS	3	0	3		Professional Communication	3	0	3
		Computer Programming	3	2	4		Digital Fabrication	0	6	3
							Data Structures	2	4	4
	Total No of Credits				**21**		**Total No of Credits**			**22**
II		**Semester-III**					**Semester-IV**			
		Introduction to IoT	2	2	3		Database Management Systems	3	2	4
		Object Oriented Programming Concepts	3	2	4		Computer Organization and Architecture	3	0	3
		Mathematics-III	3	0	3		Artificial Intelligence	3	0	3
		Discrete Structure for Computer Science	3	0	3		Web Enabled Technologies (Web 3.0)	3	0	3
		Design and Analysis of Algorithm	3	0	3		Industry Coding practice (Python & R)	2	2	3
		Theory of Computation	3	0	3		Speech Processing	3	0	3
		Principles of Managerial Economics	3	0	3		Data Science	3	0	3
		CRT	0	2	1		CRT	0	2	1
		MOOCS (Python Programming// Julia Programming)	0	0	0					
	Total No of Credits				**23**		**Total No of Credits**			**23**
SUMMER INTERNSHIP PROGRAM I (for Internship option only)										**5**
III		**Semester-V**					**Semester-VI**			
		Principal of Cryptography	3	0	3		Open Elective	3	0	3
		Operating Systems	3	2	4		Computer Networks	3	2	4
		Programming Language & Compiler Construction	3	0	3		Big Data Systems	3	0	3
		Machine Learning	3	0	4		Cloud Computing	3	2	4
		Software Engineering	3	0	3		Intelligent Transport Systems	3	0	3
		Open Elective	3	0	3		Computer Vision	3	0	3
		Audit Course	0	0	0		Special Project/Capstone Project	0	6	3

		CRT	0	2	1		CRT	0	2	1
	Total No of Credits				**21**	**Total No of Credits**				**24**
IV	**Semester-VII**					**Semester-VIII**				
		Internship Program II /					Internship Program II /			
		Thesis & Seminar /					Thesis & Seminar /			
		Electives (4) + Professional/Discipline					Electives (4) + Professional/Discipline			
		Humanities Elective (1) (Digital Humanities)					Humanities Elective (1) (Digital Humanities)			
	Total No of Credits				**20/18**	**Total No of Credits**				**20/18**
Total No of Credits										**177**

The Program structure is tentative, subject to change (if required).

Discipline Elective I (V Semester)				
Course Code	**Course Title**	**L**	**P**	**U**
	Advanced Java	3	0	3
	Advanced Computer Architecture	3	0	3
	Parallel Computing	3	0	3
	Blockchain Technology	3	0	3
Discipline Elective I (VI Semester)				
	Social Network Analysis	3	0	3
	Real Time Systems	3	0	3
	Human Computer Interface	3	0	3
	Combinatorial Optimization	3	0	3

Digital Humanities Electives I (VII/VIII Semester)				
Course Code	**Course Title**	**L**	**P**	**U**
	Social Innovation	3	0	3

Specialization Electives (VII/VIII Semester)

Machine Learning				
Course Code	**Course Title**	**L**	**P**	**U**
CS404	Deep Learning	3	0	3
CS405	Natural Language Processing	3	0	3
CS406	Information retrieval	3	0	3
CS407	Pattern Recognition	3	0	3

Cyber Security

Course Code	Course Title	L	P	U
CS404	Ethical Hacking	3	0	3
CS405	Information Security	3	0	3
CS406	IoT Security	3	0	3
CS407	Cyber Security	3	0	3

Networks				
Course Code	**Course Title**	**L**	**P**	**U**
CS404	Wireless Networks	3	0	3
CS405	Network Administration	3	0	3
CS406	Network Security	3	0	3
CS407	AI in Wireless Communications	3	0	3

Advanced Computing				
Course Code	**Course Title**	**L**	**P**	**U**
CS404	High Performance Computing	3	0	3
CS405	Advanced Computer Architecture	3	0	3
CS406	Multicore Architecture	3	0	3
CS407	Parallel Computing	3	0	3

Database				
Course Code	**Course Title**	**L**	**P**	**U**
CS401	Database Administration	3	0	3
CS402	SQL & DB Applications	3	0	3
CS403	Database Security & Privacy	3	0	3
CS404	Data Wrangling	3	0	3

The BoS members suggested following points for the further refinement of B.Tech (Data Science and Artificial Intelligence Engineering) General Program Structure (Batch 2021-25) as follows:

1. The subject “Electrical Science I” to be renamed as “Introduction to Electrical and Electronics Sciences”
2. The subject Discrete Mathematics to be shifted to 4th semester and the subject Humanities Elective I to be shifted to semester III.
3. The practical component of Machine Learning subject is to be framed & delivered according to industry trends.

4. The subject Discipline Elective (Core) of semester V and VII to retitled as Open Elective [student can register with NPTEL / other discipline subject the students has completed the Prerequisite subjects for that particular subject.]

The above points are considered and the general scheme of the program is updated accordingly

Updated-B.Tech (Data Science & Artificial Intelligence Engineering) Program

General Structure (2021-25) Second year onwards

Year	Course Code	Semester-I	L	P	U	Course Code	Semester-II	L	P	U
I		Chemistry	3	0	3		Thermodynamics	3	0	3
		English Language Skills	3	0	3		Probability & Statistics	3	0	3
		Linear Algebra	3	0	3		Higher Calculus	3	0	3
		Physics I	3	0	3		Physics II	3	0	3
		Engineering Graphics	2	4	4		Scientific Measurements	0	4	2
		Computer Programming I	3	0	3		Digital Fabrication	2	4	4
		Environmental Science	2	0	2		Computer Programming II	3	0	3
	Total No of Credits				**21**	**Total No of Credits**				**21**
II	**Semester-III**					**Semester-IV**				
		Introduction to Electrical and Electronics Sciences	3	2	4		Digital Signal Processing	3	0	3
		Introduction to DS and AI	2	2	3		computer Organization and Architecture	3	0	3
		Design and Analysis of Algorithms	3	0	3		Professional Communication	3	0	3
		Principles of Managerial Economics	3	0	3		Web enabled Technologies	3	0	3
		Data Structures	2	2	3		Data Science	3	0	3
		Differential Equations & Fourier Series	3	0	3		Database Management Systems	2	2	3
		Humanities Eective1	3	0	3		Discrete Mathematics	3	0	3
		CRT	0	2	1		CRT	0	2	1
	Total No of Credits				**23**	**Total No of Credits**				**22**
SUMMER INTERNSHIP PROGRAM I (for Internship option only)										**5**
	Semester-V					**Semester-VI**				
		Artificial Intelligence	3	0	3		Speech processing	3	2	4

III		Machine Learning	3	2	4		Autonomous Vehicles	3	0	3
		Blockchain Technology	3	0	3		Big Data systems	3	2	4
		Operating Systems	3	2	4		Deep Learning	3	0	3
		Soft computing	3	0	3		Open Elective-II	3	0	3
		Data Wrangling and Visualization	3	0	3		Special Project / TIP/Capstone Project	0	6	3
		Open Elective -I	3	0	3		CRT	0	2	1
		CRT	0	2	1		Audit Course	0	0	0
	Total No of Credits				**24**	**Total No of Credits**				**21**
IV	**Semester-VII**					**Semester-VIII**				
		Internship Program II /					Internship Program II /			
		Thesis & Seminar /					Thesis & Seminar /			
		Electives (4)					Electives (4)			
		Humanities Elective (1)					Humanities Elective (1)			
	Total No of Credits				**20/18**	**Total No of Credits**				**20/18**
Total No of Credits										**175**

The Program structure is tentative, subject to change (if required).

Discipline Elective I (V Semester)				
Course Code	**Course Title**	**L**	**P**	**U**
	Cyber Security	3	0	3
	Database Security and Privacy	3	0	3
	Ethical Hacking	3	0	3
Discipline Elective I (VI Semester)				
	Recommendation Systems	3	0	3
	Predictive Analytics	3	0	3
	Natural Language processing	3	0	3

Digital Humanities Electives I (VII/VIII Semester)				
Course Code	**Course Title**	**L**	**P**	**U**
	Social Innovation	3	0	3

Specialization Electives (VII/VIII Semester)

Data Science				
Course Code	**Course Title**	**L**	**P**	**U**

CS404	Deep Learning	3	0	3
CS405	Natural Language Processing	3	0	3
CS406	Information retrieval	3	0	3
CS407	Applied Time Series Analysis	3	0	3

Artificial Intelligence				
Course Code	**Course Title**	**L**	**P**	**U**
CS404	Human Computer Interaction	3	0	3
CS405	Intelligent Control and Cognitive Systems	3	0	3
CS406	Pattern Recognition	3	0	3
CS407	Robotics	3	0	3

Cloud Computing				
Course Code	**Course Title**	**L**	**P**	**U**
CS404	Distributed Cloud Computing	3	0	3
CS405	Security & Privacy in Cloud Computing	3	0	3
CS406	Cloud Administration	3	0	3
CS407	Real Time Data Analytics	3	0	3

Blockchain				
Course Code	**Course Title**	**L**	**P**	**U**
CS404	Blockchain with IoT	3	0	3
CS405	Information Extraction and Retrieval	3	0	3
CS406	Image and Video Processing	3	0	3
CS407	Supply Chain Analytics	3	0	3

Internet of Things				
Course Code	**Course Title**	**L**	**P**	**U**
CS401	Blockchain with IoT	3	0	3
CS402	Embedded Systems	3	0	3
CS403	AI & Humanities	3	0	3
CS404	Innovation & Entrepreneurship	3	0	3

The BoS members suggested following points for the further refinement of B.Tech (Data Science and Artificial Intelligence Engineering) General Program Structure (Batch 2022-26) as follows:

1. In Semester I, the subject "Basis of Electrical Science and Electronics/ Basics of Electronics " to be renamed as "Introduction to Electrical and Electronics Sciences"

2. In Semester I, the subject “Computer Programming I ” to be renamed as “Computer Programming”
3. The subject “Physics” to be shifted to 2nd semester and the subject Chemistry to be shifted to semester I.
4. In Semester II the subject “Environment Sciences” name should be renamed as “Environment Sciences & SDGs” [Sustainable Development Goals (SDGs)]
5. In Semester III, Subject MOOC (Python Programming) to be renamed as MOOC (Python Programming/ Julia Programming)

The above points are considered and the general scheme of the program is updated accordingly

Updated-B.Tech (Data Science & Artificial Intelligence Engineering) Program

General Structure (2022-26)

Year	Course Code	Semester-I	L	P	U	Course Code	Semester-II	L	P	U
I		Mathematics-I	3	0	3		Mathematics-II	3	0	3
		English Language Skills	2	2	3		Physics	3	2	4
		Introduction to Electrical and Electronics Sciences	3	2	4		Environment Sciences & SDGs	2	0	2
		Chemistry	3	2	4		Digital Signal Processing	3	0	3
		Introduction to DS and AI	3	0	3		Professional Communication	3	0	3
		Computer Programming	3	2	4		Digital Fabrication	0	6	3
		Essence of Indian Traditional Knowledge (Audit)	0	0	0		Data Structures	2	4	4
	Total No of Credits				**21**	**Total No of Credits**				**22**
	Semester-III					**Semester-IV**				
		Introduction to IOT	3	0	3		Computer Organization and Architecture	3	0	3

II		Object Oriented Programming Concepts	3	2	4		Artificial Intelligence	3	0	3
		Mathematics-III	3	0	3		Operating System	3	0	3
		Design and Analysis of Algorithms	3	0	3		Data Science	3	0	3
		Database Management Systems	3	2	4		Web enabled Technologies	3	0	3
		Principles of Managerial Economics	3	0	3		Industry coding practice (Python and R)	2	2	3
		Discrete Mathematics	3	0	3		Digital Humanities Eective1	3	0	3
		CRT	0	2	1		CRT	0	2	1
		MOOC (Python Programming / Julia Programming)	0	0						
	Total No of Credits				**24**	**Total No of Credits**				**22**
SUMMER INTERNSHIP PROGRAM I (for Internship option only)										**5**
III	**Semester-V**					**Semester-VI**				
		Soft computing	3	0	3		Speech Processing	3	0	3
		Machine Learning	3	2	4		Deep Learning	3	0	3
		Blockchain Technology	3	0	3		Big Data systems	3	2	4
		Computer Networks	3	2	4		Autonomous Vehicles	3	0	3
		Data Wrangling and Visualization	2	2	3		Elective-II (Core)	3	0	3
		Elective-I (Core)	3	0	3		Special Project / TIP/Capstone Project	0	6	3
		Audit Course	0	0	0		CRT	0	2	1
		CRT	0	2	1					
	Total No of Credits				**21**	**Total No of Credits**				**24**
IV	**Semester-VII**					**Semester-VIII**				
		Internship Program II /					Internship Program II /			
		Thesis & Seminar /					Thesis & Seminar /			
		Electives (4) Humanities Elective (1)					Electives (4) Humanities Elective (1)			
	Total No of Credits				**20/18**	**Total No of Credits**				**20/18**
Total No of Credits										**177**

The Program structure is tentative, subject to change (if required).

Discipline Elective I (V Semester)				
Course Code	**Course Title**	**L**	**P**	**U**
	Cyber Security	3	0	3
	Database Security and Privacy	3	0	3
	Ethical Hacking	3	0	3
Discipline Elective I (VI Semester)				

	Recommendation Systems	3	0	3
	Predictive Analytics	3	0	3
	Natural Language processing	3	0	3

Digital Humanities Electives I (VII/VIII Semester)				
Course Code	**Course Title**	**L**	**P**	**U**
	Social Innovation	3	0	3

Specialization Electives (VII/VIII Semester)

Data Science				
Course Code	**Course Title**	**L**	**P**	**U**
CS404	Deep Learning	3	0	3
CS405	Natural Language Processing	3	0	3
CS406	Information retrieval	3	0	3
CS407	Applied Time Series Analysis	3	0	3

Artificial Intelligence				
Course Code	**Course Title**	**L**	**P**	**U**
CS404	Human Computer Interaction	3	0	3
CS405	Intelligent Control and Cognitive Systems	3	0	3
CS406	Pattern Recognition	3	0	3
CS407	Robotics	3	0	3

Cloud Computing				
Course Code	**Course Title**	**L**	**P**	**U**
CS404	Distributed Cloud Computing	3	0	3
CS405	Security & Privacy in Cloud Computing	3	0	3
CS406	Cloud Administration	3	0	3
CS407	Real Time Data Analytics	3	0	3

Blockchain				
Course Code	**Course Title**	**L**	**P**	**U**
CS404	Blockchain with IoT	3	0	3
CS405	Information Extraction and Retrieval	3	0	3
CS406	Image and Video Processing	3	0	3
CS407	Supply Chain Analytics	3	0	3

Internet of Things				
Course Code	**Course Title**	**L**	**P**	**U**
CS401	Blockchain with IoT	3	0	3
CS402	Embedded Systems	3	0	3
CS403	AI & Humanities	3	0	3
CS404	Innovation & Entrepreneurship	3	0	3

The BoS members suggested following points for the further refinement of B.Sc (Data Science) General Program Structure (Batch 2022-25) as follows:

1. The board members appreciated the program structure and multiple entry and exits options.
2. In Semester I the subject "Environment Sciences" name should be renamed as "Environment Sciences & SDGs" [Sustainable Development Goals (SDGs)]
3. The subject "Object Oriented Programming Concepts C++" is shifted to Semester IV, Data structures in Semester IV is typographical error and removed from the list.
4. In Semester III, in place of OOP subject Design and analysis of algorithm subject is added.

The above points are considered and the general scheme of the program is updated accordingly

Updated- B.Sc. (Data Science) Program

General Structure (2022-25)

Year	Course Code	I Semester	L P U	Course Code	II Semester	L P U
Certification Level (I)	EGL111	English Language Skills	3 0 3	EGL121	Professional Communication	3 0 3
	MATH112	Linear Algebra	3 0 3	MATH122	Higher Calculus	3 0 3
	MATH113	Introduction to Probability	3 0 3	MATH123	Introduction to Statistics	3 0 3

	DAC114	Computer Programming using C	2 2 3	DAC124	Data structures	2 2 3
	DAC115	Introduction to FinTech	3 0 3	DAC125	Computer Programming using Python	3 0 3
	EVS116	Environmental Sciences & SDGs	3 0 3	DAC126	Foundation of Data Science	3 0 3
Total No of Credits			**18**	**Total No of Credits**		**18**
Year	**Course Code**	**III Semester**	**L P U**	**Course Code**	**IV Semester**	**L P U**
Diploma level (II)	DAC211	Design and Analysis of Algorithms	3 2 4	EGL221	Soft Skills	3 0 3
	DAC212	Data Wrangling	3 0 3	DAC222	Object Oriented Programming Concepts C++	3 0 3
	DAC213	Data Base Management Systems	3 0 3	MATH223	Optimization Techniques	3 0 3
	DAC214	Discrete Structures for Computer Science	3 0 3	DAC224	Data Visualization in Data Science	3 0 3
	DAC215	Design Thinking	3 0 3	DAC225	Machine Learning	2 2 3
	DAC216	Operating Systems	3 0 3	DAC226	Data warehousing and Mining	3 0 3
	Total No of Credits		**19**	**Total No of Credits**		**18**
	SUMMER INTERNSHIP PROGRAM					**5**
Year	**Course Code**	**V Semester**	**L P U**	**Course Code**	**VI Semester**	**L P U**
Degree level (III)	DAC311	Web Embedded Technologies	3 0 3	DAC321	Software Project Management	4 0 4
		Electives (3)	3 0 3		Electives (3)	3 0 3
		Humanities Elective (1)	3 0 3		Humanities Elective (1)	3 0 3
	CP-I	Capstone Project-I (TIC)	6	CP-II	Capstone Project-II (TIC)	6

Total No of Credits	21	Total No of Credits	22
Total credits			**121**
Electives			
Course Code	**The students of B.Sc. Data Science are allowed to choose the electives offered by B.Tech CSE and B.Tech DS & AI of ICFAI Tech School. The list of electives has to be included in the list**		**L P U**
DAC312	Natural Language processing		3 0 3
DAC313	Soft Computing		3 0 3
DAC314	Principles of Artificial Intelligence		3 0 3
DAC322	Predictive Modelling and Analysis		3 0 3
DAC323	Artificial Neural Networks		3 0 3
DAC324	Deep Learning		3 0 3
Humanities Electives			
HS315	Dynamics of social change		3 0 3
HS316	Introduction to Psychology		3 0 3
HS317	Heritage of India		3 0 3
HS325	Modern Political Science		3 0 3
HS326	Public Administration		3 0 3
HS327	Professional Ethics		3 0 3

The BoS members suggested following points for the further refinement of B.Sc. (Mathematics) General Program Structure (Batch 2022-25) as follows:

1. The Program "B.Sc. (Mathematics)" to be renamed as "B.Sc. (Mathematics-Hons.)"

2. In Semester I, the subject "Mathematics-I" to be renamed as "Matrix Algebra, Differential & Integral Calculus".
3. In Semester I, the subject "Computer Programming-I " to be renamed as "Computer Programming"

4. In Semester II, the subject “Mathematics-II” to be renamed as “Ordinary Differential Equations & Vector Analysis”.
5. In Semester III, the subject “Mathematics-III” to be renamed as “Integral Transformations”.
6. In Semester III, the Subject “MOOC (Python Programming)” to be renamed as “MOOC (Python Programming/ Julia Programming)”.
7. In Semester IV, the Subject “Partial Differential Equations & System of ODEs” to be renamed as “Partial Differential Equations”
8. In Semester IV, the repetition of the subject “Stochastic Processes” has been removed.
9. In Semester V, the Subject “Topology” is replaced by “Operational Research” and The Subject “Topology” will replace in Electives.
10. In Semester V, the Subject “Differential Geometry” to be replaced by “Differential Geometry & Tensor Calculus”
11. In Electives, the Subjects “Soft computing, Database Management Systems and Introduction to Machine Learning have been added.

The above points are considered and the general scheme of the program is updated accordingly

Updated- B.Sc. (Mathematics-Hons.) Program

General Structure (2022-25)

Year	Course Code	Semester-I	L	P	U	Course Code	Semester-II	L	P	U
I		Matrix Algebra, Differential & Integral Calculus	3	0	3		Ordinary Differential Equations & Vector Analysis	3	0	3
		English Language Skills	2	2	3		Chemistry	3	2	4
		Real Analysis	3	2	4		Environment Sciences	2	0	2
		Physics	3	2	4		Algebra	3	0	3
		Introduction to DS and AI	3	0	3		Professional Communication	2	0	2
		Computer Programming	3	2	4		Data Structures	2	4	4
		Essence of Indian Traditional Knowledge (Audit)	0	0	0					
	Total No of Credits				**21**	**Total No of Credits**				**18**
	Semester-III					**Semester-IV**				

II		Introduction to IOT	2	2	3		Stochastic Processes	3	0	3
		Object Oriented Programming Concepts	2	4	4		Artificial Intelligence	3	0	3
		Integral Transformations	3	0	3		Numerical Methods	3	0	3
		Design and Analysis of Algorithms	3	0	3		Partial Differential Equations	3	0	3
		Discrete Structures for Computer Science	3	0	3		Industry coding practice (Python and R)	2	2	3
		Introduction to Number Theory	3	0	3		Digital Humanities Eective1	3	0	3
		CRT	0	2	1		CRT	0	2	1
		MOOC (Python Programming / Julia Programming)	0	0	0					
	Total No of Credits				**20**		**Total No of Credits**			**19**
SUMMER INTERNSHIP PROGRAM I (for Internship option only)										**5**
III	**Semester-V**						**Semester-VI**			
		Complex analysis	3	0	3		Humanities Electives (1)	3	0	3
		Rings and Fields	3	0	3		Electives (4)			12
		Operational Research	3	0	3					
		Cryptography	3	0	3					
		Differential Geometry & Tensor Calculus	3	0	3					
	Total No of Credits				**15**		**Total No of Credits**			**15**
Total No of Credits										**113**

The Program structure is tentative, subject to change (if required).

Electives for B.Sc. (Mathematics-Hons.)				
Course Code	**Course Title**	**L**	**P**	**U**
MATH321	Topology	3	0	3
MATH322	Combinatorial Mathematics	3	0	3
MATH323	Advanced Probability Theory	3	0	3
MATH324	Statistical Methods	3	0	3
MATH325	Graph Theory	3	0	3
MATH326	Soft Computing	3	0	3
MATH327	Database Management Systems	3	0	3
MATH328	Introduction to Machine Learning	3	0	3

List of Humanities Electives				
Course Code	**Course Title**	**L**	**P**	**U**
HS311	Dynamics of Social Change	3	0	3
HS312	Introduction to Psychology	3	0	3
HS313	Heritage of India	3	0	3
HS314	Modern Political Science	3	0	3
HS315	Public Administration	3	0	3
HS316	Professional Ethics	3	0	3

The BoS members suggested following points for the further refinement of B.Tech (Mechatronics Engineering) General Program Structure (Batch 2021-25) as follows:

1. The subject "Electrical Science I" to be renamed as "Introduction to Electrical & Electronics Sciences"
2. The subject "Numerical Methods" to be renamed as "Matlab based Numerical Methods"

The above points are considered and the general scheme of the program is updated accordingly

Updated - B.Tech. (Mechatronics Engineering) Program

General Structure

(2021-25 Second Year onwards)

Year	Course Code	Semester-I	L	P	U	Course Code	Semester-II	L	P	U
	Semester-III					**Semester-IV**				
II		Introduction to Electrical & Electronics Sciences	3	2	4		Digital signal processing	3	0	3
		Introduction to DS and AI	3	0	3		Thermal Engineering	3	0	3

		Engineering Mechanics	3	0	3		Manufacturing Processes and Metrology	3	2	4
		Principles of Managerial Economics	3	0	3		Humanities elective	3	0	3
		Engineering Materials	3	0	3		Matlab based Numerical Methods	3	0	3
		Differential Equations & Fourier Series	3	0	3		Strength of Materials	3	0	3
		Elements of Mechatronics	3	0	3		Kinematics & Dynamics of Machinery	3	0	3
		CRT	0	2	1		CRT	0	2	1
Total No of Credits			21	4	23	**Total No of Credits**		21	4	23
SUMMER INTERNSHIP PROGRAM										**5**
Semester-V						**Semester-VI**				
		Control Systems	3	0	3		Microprocessor and Micro controllers	3	2	4
III		Sensors , Actuators and Drivers	3	2	4		Mechatronic System Design	3	0	3
		FM and HM	3	2	4		Robotics and Automation	3	0	3
		CAD/CAM/CAE	3	2	3		Hydraulics and Pneumatic Systems	3	2	4
		Micro Electro Mechanical Systems	3	0	3		Modelling & Simulation (DE-2)	3	2	4
		Design of Machine Elements	3	0	3		Special Project / TIP/Capstone Project	0	6	3
		Open Elective	3	3	3		CRT	0	2	1
		Audit Course	0	0	0					
		CRT	0	2	1					
Total No of Credits			21	11	24	**Total No of Credits**		15	14	22
	Semester-VII					**Semester-VIII**				
IV	IP401/	Internship Program II /				IP401/	Internship Program II /			
	TS401	Thesis & Seminar				TS401	Thesis & Seminar			

	–	Electives (4)+ Professional/Discipline		–	Electives (4)+ Professional/Discipline	
	–	Humanities Electives (1)		–	Humanities Electives (1)	
Total No of Credits			**20/18**	**Total No of Credits**		**20/18**
Total No of Credits						**172**

Digital Humanities Electives I (VI Semester)				
Course Code	**Course Title**	**L**	**P**	**U**
	Social Innovation	3	0	3

Specialization Electives (VII/VIII Semester)

Robotics				
Course Code	Course Title	L	P	U
	Advances in Robotics	3	0	3
	Haptics	3	0	3
	Computational Motion Planning	3	0	3
	Humanoids	3	0	3
	Human Robot Interaction (HRI)	3	0	3
	Mobile Robotics	3	0	3
	Unmanned Aerial Vehicles	3	0	3

Bio-Robotics				
Course Code	Course Title	L	P	U
	Medical Devices	3	0	3
	Tissue Modelling	3	0	3
	Medical Image Processing	3	0	3
	Cognitive Robotics	3	0	3
	Surgical Robots	3	0	3
	Machine Perception	3	0	3

Medical Robotics				
Course Code	Course Title	L	P	U
	Medical Devices	3	0	3
	Tissue Modelling	3	0	3
	Medical Image Processing	3	0	3
	Cognitive Robotics	3	0	3
	Surgical Robots	3	0	3
	Machine Perception	3	0	3

Mechatronics				
Course Code	Course Title	L	P	U
	Nano Electro Mechanical Systems	3	0	3
	Smart Materials	3	0	3
	CNC Technology	3	0	3
	Computer Integrated Manufacturing	3	0	3
	Hydraulic and Pneumatic Systems	3	0	3

Humanities Electives				
Course Code	Course Title	L	P	U
	Dynamics of Social Change	3	0	3
	Introduction to Psychology	3	0	3
	Heritage of India	3	0	3
	Modern Political Science	3	0	3
	Public Administration	3	0	3
	Professional Ethics	3	0	3

The BoS members suggested following points for the further refinement of B.Tech (Mechatronics Engineering) General Program Structure (Batch 2022-26) as follows:

1. In Semester I, the subject "Basics of Electronics" to be renamed as "Introduction to Electrical & Electronics Sciences"
2. In Semester I, the subject "Computer Programming I " to be renamed as "Computer Programming"
3. The subject "Physics" to be shifted to 2nd semester and the subject Chemistry to be shifted to 1st semester I.
4. In Semester II the subject "Environment Sciences" name should be renamed as "Environment Sciences & SDGs" [Sustainable Development Goals (SDGs)]
5. In Semester IV Numerical Methods to be renamed as "Matlab based Numerical Methods"
6. The subject "Manufacturing Processes and Metrology" to be shifted to 5th semester and subject "FM and HM" to be shifted to 4th semester.

The above points are considered and the general scheme of the program is updated accordingly

Updated- B.Tech (Mechatronics Engineering) Program

General Structure (2022-26)

Year	Course Code	Semester-I	L	P	U	Course Code	Semester-II	L	P	U
I		Mathematics-I	3	0	3		Mathematics-II	3	0	3
		English Language Skills	2	2	3		Physics	3	2	4
		Introduction to Electrical & Electronics Sciences	3	2	4		Environment Sciences & SDGs	2	0	2
		Chemistry	3	2	4		Digital Signal Processing	3	0	3
		Introduction to DS and AI	3	0	3		Professional Communication	3	0	3
		Computer Programming	3	2	4		Digital Fabrication	2	2	3
		Essence of Indian Traditional Knowledge (Audit)	0	0	0		Engineering Graphics	2	2	3
Total No of Credits			17	8	21	**Total No of Credits**		18	6	21
	Semester-III					**Semester-IV**				
		Introduction to IOT	3	0	3		Strength of Materials	2	2	3
		Object Oriented Programming Concepts	2	4	4		Thermal Engineering	3	0	3
II		Mathematics-III	3	0	3		FM and HM	3	2	4
		Elements of Mechatronics	3	0	3		Industry Coding Practice (Python and R)	2	2	3
		Engineering Mechanics	3	0	3		Matlab based Numerical Methods	3	0	3
		Principles of Managerial Economics	3	0	3		Data Structures	2	4	4
		Kinematics & Dynamics of Machinery	3	0	3		Design of Machine Elements	3	0	3
		CRT	0	2	1		CRT	0	2	1
Total No of Credits			20	6	23	**Total No of Credits**		18	12	24
SUMMER INTERNSHIP PROGRAM I (for Internship option only)										**5**
Semester-V						**Semester-VI**				
		Control Systems	3	0	3		Microprocessor and Micro controllers	3	0	3
III		Sensors , Actuators and Drivers	3	2	4		Digital Humanities Elective1	3	0	3
		Manufacturing Processes and Metrology	2	2	3		Mechatronic System Design	3	0	3
		CAD/CAM	3	0	3		Autonomous Vehicles	3	0	3
		Micro Electro Mechanical Systems	3	0	3		Intelligent Transport Systems	3	0	3
		Autotronics	3	0	3		Robotics and	3	0	3

						Automation				
		Audit Course	0	0	0	-	Special Project /TIP/Capstone Project	0	6	3
		CRT	0	2	1		CRT	0	2	1
Total No of Credits			17	6	20	**Total No of Credits**		18	8	22
	Semester-VII					**Semester-VIII**				
IV	IP401/	Internship Program II /Thesis				IP401/	Internship Program II /Thesis			
	–	Electives (4)+ Professional/Discipline				–	Electives (4)+ Professional/Discipline			
	–	Humanities Electives (1)				–	Humanities Electives (1)			
Total No of Credits			**20/18**			**Total No of Credits**				**20/18**
Total No of Credits										**174**

Digital Humanities Electives I (VI Semester)				
Course Code	**Course Title**	**L**	**P**	**U**
	Social Innovation	3	0	3

Specialization Electives (VII/VIII Semester)

Robotics				
Course Code	Course Title	L	P	U
	Advances in Robotics	3	0	3
	Haptics	3	0	3
	Computational Motion Planning	3	0	3
	Humanoids	3	0	3
	Human Robot Interaction (HRI)	3	0	3
	Mobile Robotics	3	0	3
	Unmanned Aerial Vehicles	3	0	3

Bio-Robotics				
Course Code	Course Title	L	P	U
	Medical Devices	3	0	3
	Tissue Modelling	3	0	3
	Medical Image Processing	3	0	3
	Cognitive Robotics	3	0	3

	Surgical Robots	3	0	3
	Machine Perception	3	0	3

Medical Robotics				
Course Code	Course Title	L	P	U
	Medical Devices	3	0	3
	Tissue Modelling	3	0	3
	Medical Image Processing	3	0	3
	Cognitive Robotics	3	0	3
	Surgical Robots	3	0	3
	Machine Perception	3	0	3

Mechatronics				
Course Code	Course Title	L	P	U
	Nano Electro Mechanical Systems	3	0	3
	Smart Materials	3	0	3
	CNC Technology	3	0	3
	Computer Integrated Manufacturing	3	0	3
	Hydraulic and Pneumatic Systems	3	0	3

Humanities Electives				
Course Code	Course Title	L	P	U
	Dynamics of Social Change	3	0	3
	Introduction to Psychology	3	0	3
	Heritage of India	3	0	3
	Modern Political Science	3	0	3
	Public Administration	3	0	3
	Professional Ethics	3	0	3

The BoS members suggested following points for the further refinement of B.Tech (Electronics & Communication Engineering) General Program Structure (Batch 2022-26) as follows:

1. In Semester I, the subject "Basics of Electronics " to be renamed as "Introduction to Electrical and Electronics Sciences"
2. In Semester I, the subject "Computer Programming I " to be renamed as "Computer Programming"
3. The subject "Physics" to be shifted to 2nd semester and the subject Chemistry to be shifted to semester I.
4. In Semester II the subject "Environment Sciences" name should be renamed as "Environment Sciences & SDGs" [Sustainable Development Goals (SDGs)]
5. The Subject " Computer Organization and Architecture" to be shifted to 5th semester and subject " Microprocessor Programming & Interfacing" to be shifted to 4th semester.

The above points are considered and the general scheme of the program is updated accordingly

Updated-B.Tech (Electronics & Communication Engineering) Program

General Structure (2022-26)

Year	Course Code	Semester-I	L	P	U	Course Code	Semester-II	L	P	U
I		Mathematics-I	3	0	3		Mathematics-II	3	0	3
		English Language Skills	2	2	3		Physics	3	2	4
		Introduction to Electrical & Electronics Sciences	3	2	4		Environment Sciences & SDGs	2	0	2
		Chemistry	3	2	4		Digital Signal Processing	3	0	3
		Introduction to DS and AI	3	0	3		Professional Communication	3	0	3

		Computer Programming	3	2	4		Digital Fabrication	0	6	3
		Audit Course	2	0	0		Data Structures	2	4	4
Total No of Credits			19	8	21	**Total No of Credits**		16	12	22
	Semester-III					**Semester-IV**				
II		Introduction to IoT	3	0	3		Microprocessor Programming & Interfacing	3	2	4
		Object Oriented Programming Concepts	2	4	4		Speech Processing	3	0	3
		Mathematics-III	3	0	3		Web enabled Technology	3	0	3
		Circuit Theory	2	0	2		Industry coding practice (Python and R)	2	2	3
		Control Systems	3	0	3		Hardware modelling using Verilog	3	2	4
		Principles of Managerial Economics	3	0	3		Analog Electronics	2	2	3
		Electronic Devices	3	0	3		Digital Humanities Elective1	3	0	3
		CRT	0	2	1		CRT	0	2	1
Total No of Credits			19	6	22	**Total No of Credits**		19	10	24
SUMMER INTERNSHIP PROGRAM I (for Internship option only)										**5**
Semester-V						**Semester-VI**				
III		Computer Organization and Architecture	3	0	3		ASIC Design	3	0	3
		Analog and Digital Communication (Core)	3	2	4		Embedded systems	3	0	3
		Digital VLSI Design (Core)	3	0	3		Autonomous vehicles	3	0	3
		ML Based Signal Processing	3	0	3		RF & Microwave Engineering	3	2	4
		Computer Networks	3	0	3		CMOS Analog Integrated Circuit Design	3	0	3
		Electromagnetic Fields Waves (Core)	3	0	3	-	Special Project / TIP/Capstone Project	0	6	3
		Audit Course	0	0	0		CRT	0	2	1
		CRT	0	2	1					
Total No of Credits			18	4	20	**Total No of Credits**		12	10	20

Semester-VII				Semester-VIII			
IV	IP401/ TS401	Internship Program II / Thesis & Seminar		IP401/ TS401	Internship Program II / Thesis & Seminar		
	–	Electives (4)+ Professional/Discipline		–	Electives (4)+ Professional/Discipline		
	–	Humanities Electives (1)		–	Humanities Electives (1)		
Total No of Credits			**20/18**	**Total No of Credits**			**20/18**
Total No of Credits							**172**

Digital Humanities Electives I (VI Semester)				
Course Code	**Course Title**	**L**	**P**	**U**
	Social Innovation	3	0	3

Specialization Electives (VII/VIII Semester)

Communication Electives				
Course Code	Course Title	L	P	U
	Optical Communications	3	0	3
	Wireless Communication Networks	3	0	3
	Satellite Communications	3	0	3
	Mobile Communication	3	0	3

Microwave Electives				
Course Code	Course Title	L	P	U
	Antenna and wave propagation	3	0	3
	Radar Systems	3	0	3
	RF & Microwave Communication circuits and systems	3	0	3
	Smart Antennas for Mobile Communication	3	0	3

VLSI Electives				
Course Code	Course Title	L	P	U
	Low power VLSI Design	3	0	3
	Digital Systems	3	0	3
	CPLD & FPGA	3	0	3
	IC Applications	3	0	3

Embedded Electives				
Course Code	Course Title	L	P	U
	Bio-Medical Electronics	3	0	3
	DSP Processors and Architecture	3	0	3
	Microcontrollers & Applications	3	0	3

Design Electives				
Course Code	Course Title	L	P	U
	Computer Vision	3	0	3
	Sensors & Actuators	3	0	3
	Information Theory & Coding	3	0	3

Humanities Electives				
Course Code	Course Title	L	P	U
	Dynamics of Social Change	3	0	3
	Introduction to Psychology	3	0	3
	Heritage of India	3	0	3
	Modern Political Science	3	0	3
	Public Administration	3	0	3
	Professional Ethics	3	0	3

The BoS members suggested following points for the further refinement of B.Tech (Civil Engineering) General Program Structure (Batch 2022-26) as follows:

1. "Basic of Electronics" subject rename as "Introduction to Electronics and Electrical Engineering" (Semester I).
2. "Workshop Practice" subject rename as "Digital Fabrication" (Semester II).
3. "Web Enabled Technologies" should be replaced with "Optimization Techniques". (Semester IV).

4. “Web Enabled Technologies” should be removed from semester four as well as the Civil Engineering curriculum.
5. “Industry Coding Practice (Python and R)” should be replaced with “Environmental Engineering”. (Semester IV).
6. “Industry Coding Practice (Python and R)” should be removed from semester four as well as the Civil Engineering curriculum.
7. “Construction Materials and Practices” should be rename as “Building Materials and Construction”. (Semester IV).
8. “Construction Planning and Management” and “Building Drawing, Estimation, Costing and Valuation” should be shifted from Semester V to Semester VI and Semester VI to Semester V respectively.
9. “Irrigation Engineering”, “Sustainability Development”, “Fire Safety Engineering”, and “Safety Engineering” may be added to the list of electives.

Updated- B. Tech. (Civil Engineering) Program

General Structure (2022-26)

Year	Course Code	Semester-I	L	P	U	Course Code	Semester-II	L	P	U
I		Mathematics-I	3	0	3		Mathematics-II	3	0	3
		English Language Skills	2	2	3		Professional Communication	3	0	3
		Chemistry	3	2	4		Environment Sciences & SDGs	2	0	2
		Essence of Indian Traditional Knowledge (Audit)	0	0	0		Physics	3	2	4
		Introduction to Electrical and Electronics Sciences	3	2	4		Digital Signal Processing	3	0	3
		Computer Programming	3	2	4		Introduction to AI and DS	3	0	3
		Engineering Graphics	1	4	3		Digital Fabrication	2	4	4
	Total No of Credits				**21**		**Total No of Credits**			**22**
II	**Semester-III**						**Semester-IV**			
		Introduction to IoT	3	0	3		Optimization Techniques	3	2	4
		Object Oriented Programming Concepts	2	4	4		Environmental Engineering	2	2	3
		Mathematics-III	3	0	3		Water Resources Engineering	3	0	3
		Principles of Managerial Economics	3	0	3		Soil Mechanics	3	2	4

		Engineering Mechanics	3	0	3		Building Materials and Construction	3	2	4
		Surveying	2	2	3		Mechanics of solids	2	2	3
		Fluid Mechanics and HM	2	2	3		CRT	0	2	1
		CRT	0	2	1					
	Total No of Credits				**23**	**Total No of Credits**				**22**
SUMMERINTERNSHIP PROGRAM I (for Internship option only)										**5**
III	**Semester-V**					**Semester-VI**				
		Structural Analysis	3	2	4		Open Elective	3	0	3
		Machine Learning Applications in Civil Engineering	2	0	2		Intelligent Transport Systems	3	0	3
		Highways and Tunnel Engineering	3	2	4		Design of Steel Structures	3	0	3
		Foundation Engineering	3	2	4		Construction Planning and Management	3	2	4
		Water Supply and Waste Water Engineering	3	0	3		Design of Concrete Structures	3	0	3
		Building Drawing, Estimation, Costing and Valuation	3	0	3		Airports, Railways and Harbor Engineering	3	0	3
		Audit Course	0	0	0		Special Project / Capstone Project	0	6	3
		CRT	0	2	1		CRT	0	2	1
	Total No of Credits				**21**	**Total No of Credits**				**23**
IV	**Semester-VII**					**Semester-VIII**				
		Internship Program II /					Internship Program II /			
		Thesis & Seminar /					Thesis & Seminar /			
		Electives (4) + Professional/Discipline					Electives (4) + Professional/Discipline			
		Humanities Elective (1) (Digital Humanities)					Humanities Elective (1) (Digital Humanities)			
	Total No of Credits				**20/18**	**Total No of Credits**				**20/18**
Total No of Credits										**177**

The Program structure is tentative, subject to change (if required).

FINAL YEAR ELECTIVES				
STRUCTURAL ENGINEERING				
Concrete Technology	3	0	2	4
Finite Element Analysis	3	1	2	4
Automation and Building Information Modeling	2	0	2	3
Prestressed Concrete and Bridge Engineering	3	0	0	3

Design of Industrial Structures	3	0	0	3
Advanced Structural Analysis	3	0	0	3
GEOTECHNICAL ENGINEERING				
Ground Improvement Techniques	3	0	0	3
Soil Dynamics and Machine Foundation Engineering	3	0	0	3
Design of Reinforced Earth and Geotextiles	3	0	0	3
Analysis and Design of Shallow and Deep Foundation	3	0	0	3
TRANSPORTATION ENGINEERING				
Urban Transport Planning	3	0	0	3
Pavement Evaluation, Rehabilitation and Maintenance	3	0	0	3
GIS and Remote Sensing	3	0	0	3
Mass Transportation Operations and Management	3	0	0	3
WATER RESOURCES AND ENVIRONMENTAL ENGINEERING				
Design of Hydraulic Structures (STR/WR)	3	0	0	4
Hazardous Waste Management	3	0	0	3
Environmental Impact Assessment	3	0	0	3
Disaster Management and Mitigation	3	0	0	3
Irrigation Engineering	3	0	0	3
GENERAL ELECTIVE				
Sustainability Development	3	0	0	3
Fire Safety Engineering	3	0	0	3
Safety Engineering	3	0	0	3
MATHEMATICS ELECTIVE				
Probability, Statistics and Linear programming	3	1	0	3
Numerical Methods	3	1	0	3

Digital Humanities Electives I (VII/VIII Semester)				
Course Code	**Course Title**	**L**	**P**	**U**
	Social Innovation	3	0	3

The BoS members suggested following points for the further refinement of B.Tech (Mechanical Engineering) General Program Structure (Batch 2022-26) as follows:

1. In Semester I, the subject "Basics of Electronics " to be renamed as "Introduction to Electrical and Electronics Sciences"
2. In Semester I, the subject "Computer Programming I " to be renamed as "Computer Programming".
3. In semester I engineering graphics lectures increase by 1.
4. In Semester II the subject "Environment Sciences" name should be renamed as "Environment Sciences & SDGs" [Sustainable Development Goals (SDGs)].
5. In Semester III, fluid mechanical and HM renamed as "Fluid Mechanics".
6. In semester IV applied thermodynamics –I renamed as "Applied Thermodynamics".
7. In Semester V, applied Thermodynamic II replaced with control systems of 6th Semester Subjects.
8. Numerical Methods renamed as "Matlab Based Numerical Methods"
9. In Semester VI – FEM Concepts is suggested to add in Computer aided design subject.
10. Pipe Design, Duct Design and fire Safety subjects to be added in Specialized Elective list.

The above points are considered and the general scheme of the program is updated accordingly

Updated- B.Tech. (Mechanical Engineering) Program General Structure (2022-26)

Year	Code	Semester-I	L	T	U	Code	Semester-II	L	T	U
I		Mathematics-I	3	0	3		Mathematics-II	3	0	3
		English Language Skills	2	2	3		Professional Communication	3	0	3
		Chemistry	3	2	4		Environment Sciences & SDGs	2	0	2
		Essence of Indian Traditional Knowledge (Audit)	0	0	0		Physics	3	2	4
		Introduction to Electrical and Electronics Sciences	3	2	4		Digital Signal Processing	3	0	3
		Computer Programming	3	2	4		Introduction to AI and DS	3	0	3

		Engineering Graphics	2	4	4		Digital Fabrication	2	4	4
Total No of Credits			15	12	22	**Total No of Credits**		19	6	22
	Semester-III					**Semester-IV**				
		Introduction to IoT	3	0	3		Matlab Based Numerical Methods	3	2	4
		Object Oriented Programming Concepts	2	4	4		Industry coding practice (Python and R)	2	2	3
II		Mathematics-III	3	0	3		Strength of Materials	3	0	3
		Principles of Managerial Economics	3	0	3		Applied Thermodynamics	3	0	3
		Engineering Mechanics	3	0	3		Kinematics & Dynamics of Machinery	3	0	3
		Thermal Engineering	3	0	3		Machine Drawing	2	4	4
		Fluid Mechanics and HM	2	2	3					
		CRT	0	2	1		CRT	0	2	1
Total No of Credits			19	8	23	**Total No of Credits**		16	10	21
Summer Internship program										**5**
Semester-V						**Semester-VI**				
		Control Systems	3	0	3		Digital Humanities Eective1	3	0	3
III		Machine Learning Applications in Mechanical Engineering	2	0	2		Intelligent Transport Systems	2	0	2
		Optimization Techniques	3	0	3		Manufacturing Processes & Technology	3	2	4
		Hydraulics & Hydraulic Machinery	3	2	4		Computer Aided Design	3	2	4
		Design of Machine Elements	3	0	3		Supply Chain Management	3	0	3
		Machine Tools & Metrology	3	2	4		Special Project / TIP / Capstone Project	0	6	3
		Audit Course	0	0	0		CRT	0	2	1
		CRT	0	2	1					
Total No of Credits			17	8	20	**Total No of Credits**		14	12	20
	Semester-VII					**Semester-VIII**				
IV	IP401/	Internship Program II /Thesis				IP401/	Internship Program II /Thesis			
	–	Electives (4) + Professional / Discipline Electives				–	Electives (4) + Professional / Discipline Electives			
	–	Humanities Electives (1)				–	Humanities Electives (1)			
Total No of Credits			**20/18**			**Total No of Credits**		**20/18**		
Total No of Credits								**174**		

FINAL YEAR ELECTIVES

	L	T	P
Manufacturing			
Precision Engineering	3	2	3
Advanced in Material Science	2	2	3
Nanotechnology	3	0	3
Computer Aided Manufacturing	2	2	3
Smart Manufacturing - Industry 4.0	3	0	3
Green Manufacturing	2	2	3
Design			
Mechanical Equipment Design	3	0	3
Theory of Elasticity	3	0	3
Principles of Tribology	3	0	3
Mechanics of Composite Materials	3	0	3
Vibration Control	2	2	3
AI & ML in Design Analysis	2	2	3
Energy Engineering			
Automotive Engineering	3	0	3
Refrigeration and Air Conditioning	2	3	3
Power Plant Engineering	3	0	3
Nonconventional Sources of Energy	3	0	3
Computational Fluid Dynamics	2	2	3
Cryogenics	3	0	3
Industrial Engineering			
Production Planning & Control	3	0	3
Automation and Intelligent Systems	3	0	3
Quality Assurance & Reliability	3	0	3
Operations Research and Decision Sciences	3	0	3
Systems Analysis	3	0	3
Simulation & Modeling	2	2	3

Emerging Areas			
Additive Manufacturing Processes and Applications	2	2	3
Mechatronics	2	2	3
Robotics & Automation	2	2	3
Machine to Machine Communication	3	0	3
Reverse Engineering	3	0	3
Autonomous Vehicle	3	0	3

The meeting was concluded with vote of thanks.

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(In-Charge, ICFAI Tech School & Mechanical Dept.)

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(Academic Coordinator, Asst. Professor, CSE)

Mr. Amit Kumar Bera
(IQAC & Civil Dept. IUD)

Prof. Amit Das
(Asst. Prof CSE)

Dr. T K Mandal
(Associate Prof. Chemistry)

Dr. Gaurav Bhandari
(Asst. Prof ECE, Mechatronics)

Dr. Mukul Jain
(Asst. Prof. Mathematics)

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Associate Professor and Dean
IcfaiTech Jaipur

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(Assistant Vice President, Genpact Technologies, India)

Prof. (Dr.) Ram Karan Singh
Vice Chancellor
(The ICFAI University, Dehradun)

Emerging Areas			
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Robotics & Automation	2	2	3
Machine to Machine Communication	3	0	3
Reverse Engineering	3	0	3
Autonomous Vehicle	3	0	3

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Dr A K Saini [ICFAI University-Jaipur] <aksaini@iujaipur.edu.in> Mon, Feb 21, 2022 at 1:00 PM
To: Academic ITS <academics.fst@iudehradun.edu.in>
Cc: skpanda00007@gmail.com, "Prof. A Chandra Shekhar Akula" <acshekhar@ifheindia.org>, manpreet.singh1@genpact.com

Dear Sir,

Its ok from my side
[Quoted text hidden]
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Best Regards,

A K Saini, PhD(NIT-Kurukshetra)
ICFAI University
Jaipur
Established under the provisions of the ICFAI University, Jaipur Act 2011 (Act No. 25 of 2011)

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Mon, Feb 21, 2022 at 5:16 PM

This looks great. Thanks for incorporating our suggestions. Kudos to the academic team for creating such a wonderful program.

Regards
Manpreet

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