Sardar Patel Institute of Technology

[Knowledge is Nectar]

MCA PROGRAM AT SPIT: 2023 ITERATION

Salient Features

- 84 Credits Education Model

- A strong program core of 6 courses, 4 baskets of Thread Electives, 8 Program Electives, 8 skilled-based courses to ensure breadth and depth in a chosen domain of studies..

- Credit-based 6-Month Industry Internship.

- Aggressive model of "Learning by Doing".

- First-of-its-kind-in-education blend to MCA Curriculum. "ABLL@LLC"® (Activity Based Liberal Learning about Life, Literature, and Culture) in all semesters,.

- HSSE courses like Finance, Law, Psychology, and Economics are offered to have a multidisciplinary approach in learning.

- Provision to earn credits against HSSE courses, Open Electives through MOOC Courses.

- Provision to earn credits through bridge courses for Non-Computer / IT students.

This curriculum aims at the development of an all-rounded personality. It follows a holistic approach of education, ensures mathematics foundation and program core, develops expertise in domain verticals through sequel of electives, LLC and HSSE courses.

Nomenclature of the Courses

BSC	Basic Science Course
SBC	Skilled Based Course
PC	Program Core
TE	Thread Elective
PE	Program Elective
MLC	Mandatory Learning Course
OE	Open Elective
HSSE	Humanities and Social Science Elective
LLC	Lifelong Learning Course
ABL	Activity Based Learning

Abbreviations

L	Lecture Hour	O	Other Work (Assignments, Self-Study, etc)
T	Tutorial Hour	E	Total Engagement in Hours for the Learners
P	Laboratory Hour	C	Credit Assigned

CURRICULUM STRUCTURE

No	Type	Code	Course	L	T	P	O	E	C
Sem I (For Computer/IT Graduates)									
1	BSC	MA501	Linear Algebra	2	1	0	5	8	3
2	PC	MC501	Data Structures	2	0	2	4	8	3
3	PC	MC502	Database Management System	3	0	2	5	10	4
4	PC	MC503	Software Engineering	3	0	2	5	10	4
5	SBC	MC504	Web Technology Lab	0	0	4	4	8	2
6	SBC	AS501	Writing Skills	1	0	2	2	5	2
7	HSSE	HSEX1	HSS-I	2	0	0	3	5	2
8	ABL	LLCXX	LLC-I	0	0	0	2	2	1
			TOTAL	**13**	**1**	**12**	**30**	**56**	**21**

No	Type	Code	Course	L	T	P	O	E	C
Sem I (For Non-Computer/IT Graduates)									
1	BSC	MA501	Linear Algebra	2	1	0	5	8	3
2	BSC*	MA502	Discrete Mathematics	2	0	0	3	5	2
3	PC	MC501	Data Structures	2	0	2	4	8	3
4	PC	MC502	Database Management System	3	0	2	5	10	4
5	PC	MC503	Software Engineering	3	0	2	5	10	4
6	SBC	MC504	Web Technology Lab	0	0	4	4	8	2
7	PC*	MC505	Problem Solving using OOPs Lab	2	0	2	2	6	3
8	SBC	AS501	Writing Skills	1	0	2	2	5	2
			TOTAL	**15**	**1**	**14**	**30**	**60**	**23**

Sem II (For Computer/IT Graduates)

No	Type	Code	Course	L	T	P	O	E	C
1	BSC	MA503	Probability and Statistics	3	0	0	4	7	3
2	PC	MC506	Java Programming	2	0	4	3	9	4
3	PC	MC507	Design and Analysis of Algorithms	2	0	2	3	7	3
4	PC	MC508	Process Automation	2	0	2	4	8	3
5	PE	MC5XX-I	Thread Elective-I /Program Elective-I	3	0	2	4	9	4
6	SBC	MC509	Mobile Programming Lab	0	0	4	4	8	2
7	SBC	AS502	Communication & Presentation Skills	1	0	2	2	5	2
8	HSSE	HSEX2	HSS-II	2	0	0	3	5	2
			TOTAL	15	0	16	27	58	23

Sem II (For Non Computer/IT Graduates)

No	Type	Code	Course	L	T	P	O	E	C
1	BSC	MA503	Probability and Statistics	3	0	0	4	7	3
2	PC*	MC510	Operating System	3	0	0	4	7	3
3	PC	MC506	Java Programming	2	0	4	3	9	4
4	PC	MC507	Design and Analysis of Algorithms	2	0	2	3	7	3
5	PC	MC508	Process Automation	2	0	2	4	8	3
6	PE	MC5XX-I	Thread Elective-I** /Program Elective-I	3	0	2	4	9	4
7	SBC	MC509	Mobile Programming Lab	0	0	4	4	8	2
8	SBC	AS502	Communication & Presentation Skills	1	0	2	2	5	2
			TOTAL	16	0	16	28	60	24

SUMMER TERM (For Computer/IT Graduates)					
No	**Type**	**Code**	**Course**	**E**	**C**
1	MLC	AS601	Constitution of India	5	NC
2	SBC	AS602	Project-I (Project to address social problem)	8	3
3	ABL	LLC	LLC-II	5	1
			TOTAL	**18**	**4**

SUMMER TERM (For Non Computer/IT Graduates)					
No	**Type**	**Code**	**Course**	**E**	**C**
1	MLC	AS601	Constitution of India	5	NC
2	ABL	LLCXX	LLC-I	5	1
3	HSS	OEHXX	Open Elective from Humanities	10	NC
			TOTAL	**20**	**1**

Sem III (For Computer/IT Graduates)

No	Type	Code	Course	L	T	P	O	E	C
1	OE*	OEXXX	Open Elective-I	3	0	0	5	8	3
2	PE	MC5XX-II	Thread Elective-II ** /Program Elective-II	3	0	2	4	9	4
3	PE	MC5XX-III	Thread Elective-III /Program Elective-III	3	0	2	4	9	4
4	SBC	MC601	Project-II	0	0	8	8	16	4
5	HSSE	HSEX3	HSS-III	2	0	0	3	5	2
6	SBC	AS603	Selling and Negotiation Skills	2	0	0	3	5	2
7	ABL	LLC	LLC-III	0	0	0	2	2	1
			TOTAL	**13**	**0**	**12**	**29**	**54**	**20**

Sem III (For Non-Computer/IT Graduates)

No	Type	Code	Course	L	T	P	O	E	C
1	PC*	MC602	Computer Networks	2	0	0	3	5	2
2	OE*	OEXXX	Open Elective-I	3	0	0	5	8	3
3	PE	MC5XX-II	Thread Elective-II ** /Program Elective-II	3	0	2	4	9	4
4	PE	MC5XX-III	Thread Elective-III /Program Elective-III	3	0	2	4	9	4
5	SBC	MC601	Project-II	0	0	8	8	16	4
6	SBC	AS603	Selling and Negotiation Skills	2	0	0	3	5	2
7	ABL	LLC	LLC- II	0	0	0	2	2	1
			TOTAL	**13**	**0**	**12**	**29**	**54**	**20**

- *** Credit for the subject titled "Design Thinking" of 4 credits in Design Track 3 will be offered with 2 credits for theory and 2 credits for laboratory.*

Sem IV									
No	Type	Code	Course	L	T	P	O	E	C
1	OE*	OEXXX	Open Elective-II	3	0	0	5	8	3
2	ABL	LLC	LLC-IV(Computer/IT) LLC-III (Non Computer/IT)	0	0	0	2	2	1
3	SBC	MC610	6-Month Industry Internship/Research internship at SPIT or Other Institute / Internship with Startup at TBI	0	0	0	0	45	12
			TOTAL	3	0	0	7	55	16

* indicates MOOC Courses

THREAD ELECTIVES

Sr. No.	Thread	Thread Elective I	Thread Elective II	Thread Elective III
1	**Data Science**	Machine Learning (MC511)	Deep Learning (MC512)	Data Visualization and Analytics (MC513)
2	**Software Testing**	Software Testing (MC514)	Quality Assurance (MC515)	Risk Analysis (MC516)
3	**Design**	Design Thinking ** (MC517)	Human Machine Interaction (MC518)	User Experience Design (MC519)
4	**Full Stack Development**	DevOps (MC520)	React (MC521)	Springboot and Microservices (MC522)
5	Any new thread approved by BoS			

**MC517 of 4 credits will be offered with 2 credits for theory and 2 credits for laboratory.

PROGRAM ELECTIVES / MOOC

MC523	IoT and I2oT
MC524	Cloud Computing
MC525	Artificial Intelligence
MC526	Cyber Security
MC527	Block Chain Technology
MC528	Data Warehousing and Mining
MC529	Computer Graphics
MC530	Ethical Hacking
	Any other Course approved by the Dean Academics and Principal

OPEN ELECTIVES / MOOC

OEHXX	Management Principles
OEHXX	IPR and Patents
OEHXX	Law for Engineers
OEHXX	Organizational Behavior
OEHXX	Leadership, Innovation and Entrepreneurship
OEHXX	Project Management
OEHXX	Finance for Engineers
OEHXX	Research Methodology
OEHXX	Any course approved by Dean Academics and Principal

Humanities and Social Science Electives

National Education Policy 2019 has aptly spelled out the necessity of Humanities in the Professional Education. It quotes, "A holistic and liberal education as described so beautifully in India's past is indeed what is needed for the education of India in the future to truly lead the country into the 21st century and the fourth industrial revolution. Even engineering schools such as the IITs must move towards a more liberal education integrating arts and humanities". Every program at SPIT has three baskets of humanities. Learners are encouraged to take diversified courses in the field of languages, law, history, economics, management, finance etc.

Special Tracks

	HSSE-I		**HSSE-II**		**HSSE-III**
HSE11	Law for Engineers-I	HSE12	Law for Engineers-II	HSE13	Law for Engineers-III
HSE21	Finance for Engineers-I	HSE22	Finance for Engineers-II	HSE23	Finance for Engineers-III
HSE31	Psychology-I	HSE32	Psychology-II	HSE33	Psychology-III
HSE41	Economics-I	HSE42	Economics-II	HSE43	Economics-III
HSE51	Ancient India	HSE52	Medieval India	HSE53	Modern India
HSE6X1	Language X-I	HSE6X2	Language X-II	HSE6X3	Language X-III

Common Pool for HSSE-I, II and III (May be studied on MOOC's)

HSEC01	Film Appreciation	HSEC02	Universal Values
HSEC03	Game Theory	HSEC04	Human Behavior
HSEC05	Ecology and Society	HSEC06	Energy Economics and Policies
HSEC07	Drama Appreciation	HSEC08	Political Ideologies
HSEC09	Justice	HSECXX	Any other Approved Course
HSEXX	Any course from HSSE-I		

Activity Based Liberal Learning about Life, Literature and Culture (ABLL@LLC)

"Education will fail ignominiously in its objective if it manufactures only a robot and called him an economic man stressing the adjective economic and forgetting the substantive man. A university cannot afford to ignore the cultural aspects of education whatever studies it specializes in. Science is a means, not an end. Whereas culture is an end in itself. Even though you may ultimately become a scientist, a doctor, or an engineer, you must, while in college, absorb fundamental values which will make you a man of culture.."

Kulpati Dr. K. M. Munshi

How aptly our visionary founder has given direction to the education. His wisdom towards education inspires, encourages us to experiment in the field of education, to make it as relevant and helpful to the society as possible. Mahatma Gandhi once quoted, *"By education I mean an all-round drawing out of the best in man; body, mind and spirit."*

Recently announced National Policy on Education-2019, reconfirms this and profoundly stresses the need of liberalizing the higher education including professional education. It quotes, *"Higher education must develop good, well-rounded and creative individuals, with intellectual curiosity, spirit of service and a strong ethical compass".* Moving towards a more liberal undergraduate education is one of the most important features of this policy. It narrates, *"The needs of the 21st century require that liberal broad-based multidisciplinary education become the basis for all higher education. This will help develop well-rounded individuals that possess critical 21st century capacities in fields across arts, humanities, sciences, social sciences, and professional, technical, and vocational crafts, an ethic of social engagement, and rigorous specialization in a chosen field or fields. Such a liberal education would be, in the long run, the approach across all undergraduate programs, including those in professional, technical, and vocational disciplines. Imaginative and flexible curricular structures will enable creative combinations of disciplines for students to study, thus demolishing currently prevalent rigid boundaries and creating new possibilities for lifelong learning. The notion of 'knowledge of many arts'- i.e. what is called 'liberal arts' in modern times – must be brought back to Indian education, as it is exactly the kind of education that will be required for the 21st century."*

We at Bhavan's SPIT, make sincere attempt to blend engineering education appropriately with arts, humanities, crafts, ethic of personal and social engagement to ensure holistic development of the learner. We have carefully designed liberal learning courses covering Life, Literature, and Culture (LLC @ LLC) for all the semesters of the program. Learner concurrently studies these courses. These courses broadly fall under two groups, namely "SEVA (Social Empowerment through Various Activities)" and "SATVA (Self Accomplishment through Various Activities)". Each of these groups, has four modules as indicated in Table 1 and Table 2. Further each module has multiple courses of 1 or 2 credits (An engagement of 35-40 hours is expected to earn one credit). Every learner at SPIT is expected to take 1 such course on LLC every semester. We strongly believe that these EIGHT liberal learning modules will help us to appropriately blend the professional education as envisaged by the National Policy Makers.

ABLL@LLC

● **Students are required to earn 4 credits(Computer/IT) and 3 credits (Non Computer/IT) through 4 semesters.**

● **If student is not able attendance/performance requirements, he/she will be dropped from the course and will have to enroll in additional course in the next semester.**

A student can enroll in maximum 2 courses in a semester.

List (indicative) of Courses LLC

Course Code	Course Title
LLC01	Dance (Kathak)
LLC02	Dance (Bharatnatyam)
LLC02	Fundamentals of Photography
LLC03	Art of Short Film Making / Cinematography
LLC04	Film Appreciation
LLC05	Basics of Music Composition
LLC06	Basics of Keyboard playing
LLC07	Physical Fitness
LLC08	Self Defense for Women
LLC09	Pran-Vidya (Combo of Yoga and Pranayam)
LLC10	Jeevan Vidya (Work Life Balance)
LLC11	Integrated Personality Development-I
LLC12	Indian Knowledge System-I
LLC13	Design Thinking
LLC14	Innovation and Creativity
LLC15	Principle Centered Leadership
LLC16	Social Psychology
LLC17	Mentoring of School Children at SPIT (Abhudaya)
LLC18	Basics of Fire Safety
LLC19	Study of one of the Identified Books
LLC20	Teaching Assistantship
LLC21	Mentorship to Juniors (for Final Year Students)
LLC22	Kannada Language
LLC23	Telugu Language
LLC24	Tamil Language
LLCXX	Any other Course approved by Dean Academics and Research