

## 1.3.1

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI**  
**B.E. in Computer Science and Engineering**  
**Scheme of Teaching and Examinations 2021**  
**Outcome Based Education (OBE) and Choice Based Credit System (CBCS)**  
**(Effective from the academic year 2021 - 22)**

**III SEMESTER**

Sl. No	Course and Course Code	Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
				Theory Lecture	Tutorial	Practical/ Drawing	Self -Study	Duration in hours	CIE Marks	SEE Marks	Total Marks	
				L	T	P	S					
1	BSC 21MAT31	Transform Calculus, Fourier Series and Numerical Techniques	Maths	3	0	0		03	50	50	100	3
2	IPCC 21CS32	Data Structures and Applications	Any CS Board Department	3	0	2		03	50	50	100	4
3	IPCC 21CS33	Analog and Digital Electronics		3	0	2		03	50	50	100	4
4	PCC 21CS34	Computer Organization and Architecture		3	0	0		03	50	50	100	3
5	PCC 21CSL35	Object Oriented Programming with JAVA Laboratory		0	0	2		03	50	50	100	1
6	UHV 21UH36	Social Connect and Responsibility	Any Department	0	0	1		01	50	50	100	1
7	HSMC 21KSK37/47	Sanskritika Kannada	TD and PSB: HSMC	1	0	0		01	50	50	100	1
	HSMC 21KKBK37/47	Balake Kannada										
	<b>OR</b>											
	HSMC 21CIP37/47	Constitution of India and Professional Ethics										
8	AEC 21CS38X/21 CSL38X	Ability Enhancement Course - III	TD: Concerned department PSB: Concerned Board	If offered as Theory Course				01	50	50	100	1
				1	0	0						
				If offered as lab. course				02				
				0	0	2						
<b>Total</b>									<b>400</b>	<b>400</b>	<b>800</b>	<b>18</b>

9	Scheduled activities for III to VIII semesters	NMDC 21NS83	National Service Scheme (NSS)	NSS	All students have to register for any one of the course namely National Service Scheme, Physical Education (PE) (Sports and Athletics) and Yoga with the concerned coordinator of the course during the first week of III semester. The activities shall be carried out from (for 5 semesters) between III semester to VIII semester. SEE in the above courses shall be conducted during VIII semester examinations and the accumulated CIE marks shall be added to the SEE marks. Successful completion of the registered course is mandatory for the award of the degree. The events shall be appropriately scheduled by the colleges and the same shall be reflected in the colander prepared for the NSS, PE and Yoga activities.							
		NMDC 21PE83	Physical Education (PE) (Sports and Athletics)	PE								
		NMDC 21YO83	Yoga	Yoga								

**Course prescribed to lateral entry Diploma holders admitted to III semester B.E./B.Tech programs**

1	NCMC 21MATDIP31	Additional Mathematics - I	Maths	02	02	--	--	---	100	---	100	0
<b>Ability Enhancement Course - III</b>												
21CSL381	Mastering Office		21CS383									
21CS382	Programming IN c++		21CS384									

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**IV SEMESTER**

Sl. No	Course and Course Code	Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
				Theory Lecture	Tutorial	Practical/ Drawing	Self -Study	Duration in hours	CIE Marks	SEE Marks	Total Marks	
				L	T	P	S					
1	BSC 21CS41	Mathematical Foundations for Computing	Maths	2	2	0		03	50	50	100	3
2	IPCC 21CS42	Design and Analysis of Algorithms	Any CS Board Department	3	0	2		03	50	50	100	4
3	IPCC 21CS43	Microcontroller and Embedded SystemS		3	0	2		03	50	50	100	4
4	PCC 21CS44	Operating Systems		2	2	0		03	50	50	100	3
5	AEC 21BE45	Biology For Engineers	BT, CHE, PHY	2	0	0		02	50	50	100	2
6	PCC 21CSL46	Python Programming Laboratory	Any CS Board Department	0	0	2		03	50	50	100	1
7	HSMC 21KSK37/47	Samskrutika Kannada	HSMC	1	0	0		01	50	50	100	1
	HSMC 21KKBK37/47	Balake Kannada										
	OR											
	HSMC 21CIP37/47	Constitution of India & Professional Ethics										
8	AEC 21CS48X/21C SL48X	Ability Enhancement Course- IV	TD and PSB: Concerned department	If offered as theory Course				01	50	50	100	1
				1	0	0						
				If offered as lab. course				02				
				0	0	2						
9	UHV 21UH49	Universal Human Values	Any Department	1	0	0		01	50	50	100	1
10	INT 21INT49	Inter/Intra Institutional Internship	Evaluation By the appropriate authorities	Completed during the intervening period of II and III semesters by students admitted to first year of BE./B.Tech and during the intervening period of III and IV semesters by Lateral entry students admitted to III semester.				3	100	--	100	2
<b>Total</b>									<b>550</b>	<b>450</b>	<b>1000</b>	<b>22</b>

**Course prescribed to lateral entry Diploma holders admitted to III semester of Engineering programs**

1	NCMC 21MATDIP41	Additional Mathematics - II	Maths	02	02	--	--	--	100	--	100	0
<b>Ability Enhancement Course - IV</b>												
21CSL481	Web Programming		21CSL483	R Programming								
21CS482	Unix Shell Programming		21CS484									

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V SEMESTER												
Sl. No	Course and Course Code	Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination			Credits	
				Theory Lecture	Tutorial	Practical/ Drawing	Self -Study	Duration in hours	CIE Marks	SEE Marks		Total Marks
				L	T	P	S					
1	BSC 21CS51	Automata Theory and compiler Design	Any CS Board Department	3	0	0		03	50	50	100	3
2	IPCC 21CS52	Computer Networks		3	0	2		03	50	50	100	4
3	PCC 21CS53	Database Management Systems		3	0	0		03	50	50	100	3
4	PCC 21CS54	Artificial Intelligence and Machine Learning		3	0	0		03	50	50	100	3
5	PCC 21CSL55	Database Management Systems Laboratory with Mini Project		0	0	2		03	50	50	100	1
6	AEC 21XX56	Research Methodology & Intellectual Property Rights	TD: Any Department PSB: As identified by university	2	0	0		02	50	50	100	2
7	HSMC 21CIV57	Environmental Studies	TD: Civil/ Environmental /Chemistry/ Biotech. PSB: Civil Engg	1	0	0		1	50	50	100	1
8	AEC 21CS58X/21 CS58LX	Ability Enhancement Course-V	Concerned Board	If offered as Theory courses				01	50	50	100	1
				1	0	0						
				If offered as lab. courses				02				
				0	0	2						
<b>Total</b>									<b>400</b>	<b>400</b>	<b>800</b>	<b>18</b>
<b>Ability Enhancement Course - IV</b>												
21CSL581	Angular JS and Node JS		21CS583									
21CS582	C# and .Net Framework		21CS584									

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**VI SEMESTER**

Sl. No	Course and Course Code	Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
				Theory Lecture	Tutorial	Practical/ Drawing	Self -Study	Duration in hours	CIE Marks	SEE Marks	Total Marks	
				L	T	P	S					
1	HSMC 21CS61	Software Engineering & Project Management	Any CS Board Department	2	2	0		03	50	50	100	3
2	IPCC 21CS62	Fullstack Development		3	0	2		03	50	50	100	4
3	PCC 21CS63	Computer Graphics and Fundamentals of Image Processing		3	0	0		03	50	50	100	3
4	PEC 21XX64x	Professional Elective Course-I		3	0	0		03	50	50	100	3
5	OEC 21XX65x	Open Elective Course-I	Concerned Department	3	0	0		03	50	50	100	3
6	PCC 21CSL66	Computer Graphics and Image Processing Laboratory	Any CS Board	0	0	2		03	50	50	100	1
7	MP 21CSMP67	Mini Project		Two contact hours /week for interaction between the faculty and students.				--	100	--	100	2
8	INT 21INT68	Innovation/Entrepreneurship /Societal Internship	Completed during the intervening period of IV and V semesters.				--	100	--	100	3	
<b>Total</b>								<b>500</b>	<b>300</b>	<b>800</b>	<b>22</b>	

**Professional Elective - I**

21CS641	Agile Technology	21CS643	Advanced Computer Architecture
21CS642	Advanced JAVA Programming	21CS644	Data science and Visualization

**Open Electives – I offered by the Department to other Department students**

21CS651	Introduction to Data Structures	21CS653	Introduction to Cyber Security
21CS652	Introduction to Database Management Systems	21CS654	Programming in JAVA

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**Swappable VII and VIII SEMESTER**

**VII SEMESTER**

Sl. No	Course and Course Code	Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination			Credits	
				Theory Lecture	Tutorial	Practical/ Drawing	Self-Study	Duration in hours	CIE Marks	SEE Marks		Total Marks
				L	T	P	S					
1	PCC 21CS71	Big Data Analytics	Any CS Board Department	3	0	0		3	50	50	100	3
2	PCC 21CS72	Cloud Computing		2	0	0		3	50	50	100	2
3	PEC 21XX73X	Professional elective Course-II		3	0	0		3	50	50	100	3
4	PEC 21XX74X	Professional elective Course-III		3	0	0		3	50	50	100	3
5	OEC 21XX75X	Open elective Course-II	Concerned Department	3	0	0		3	50	50	100	3
6	Project 21CSP76	Project work		Two contact hours /week for interaction between the faculty and students.				3	100	100	200	10
<b>Total</b>								<b>350</b>	<b>350</b>	<b>700</b>	<b>24</b>	

**VIII SEMESTER**

Sl. No	Course and Course Code	Course Title	Teaching	Teaching Hours /Week				Examination			Credits	
				Theory Lecture	Tutorial	Practical/ Drawing	Self-Study	Duration in	CIE Marks	SEE Marks		Total Marks
				L	T	P	S					
1	Seminar 21CS81	Technical Seminar		One contact hour /week for interaction between the faculty and students.				--	100	--	100	01
2	INT 21INT82	Research Internship/ Industry Internship		Two contact hours /week for interaction between the faculty and students.				03 (Batch wise)	100	100	200	15
3	NCMC	21NS83 National Service Scheme (NSS)	NSS	Completed during the intervening period of III semester to VIII semester.				--	50	50	100	0
		21PE83 Physical Education (PE) (Sports and Athletics)	PE									
		21YO83 Yoga	Yoga									
<b>Total</b>								<b>250</b>	<b>150</b>	<b>400</b>	<b>16</b>	

**Professional Elective - II**

21CS731	Object oriented Modelling and Design	21CS734	Blockchain Technology
21CS732	Digital Image Processing	21CS735	Internet of Things
21CS733	Cryptography and Network Security		

**Professional Elective - III**

21CS741	Software Architecture and Design Patterns	21CS744	Robotic Process Automation Design and Development
21CS742	Multiagent Systems	21CS745	NoSQL Data Base
21CS743	Deep Learning		

**Open Electives - II offered by the Department to other Department students**

21CS751	Programming in Python	21CS754	Introduction to Data Science
21CS752	Introduction to AI and ML	21CS755	
21CS753	Introduction to Big Data		

<b>Activities</b>	<b>Description</b>
International women's Day Celebration	7 <sup>th</sup> March 2022. The chief guest was SMT. ROOPA D, IPS, Managing Director, Karnataka State Handicrafts Development Corporation Ltd and SMT. JYOTHI SIVARAMAKRISHNAN, Head of People Service Delivery India, London Stock Exchange Group(LSEG).
Internal Complaints committee	<p>This committee is headed by Dr. Vipula Singh and others. The responsibilities of the committee include</p> <ol style="list-style-type: none"> <li>a) provide assistance if an employee or a student chooses to file a complaint with the police;</li> <li>b) provide mechanisms of dispute redressal and dialogue to anticipate and address issues through just and fair conciliation without undermining complainant's rights, and minimize the need for purely punitive approaches that lead to further resentment, alienation or violence;</li> <li>c) protect the safety of the complainant by not divulging the person's identity, and provide the mandatory relief by way of sanctioned leave or relaxation of attendance requirement or transfer to another Department or supervisor as required during the pendency of the complaint, or also provide for the transfer of the offender;</li> <li>d) ensure that victims or witnesses are not victimised or discriminated against while dealing with complaints of sexual harassment; and</li> <li>e) ensure prohibition of retaliation or adverse action against a covered individual because the employee or the student is engaged in protected activity.</li> </ol>
April cool day 2022	NSS Prerana conducted with motto Plantation in college campus
Environmental Studies' with the subject code '15CIV18/15CIV28'	<p>The contents include</p> <p>Components of Environment Ecosystem: Types &amp; Structure of Ecosystem, Balanced ecosystem Human Activities – Food, Shelter and Economic &amp; Social Security.</p> <p>– Impacts of Agriculture &amp; Housing Impacts of Industry, Mining &amp; Transportation</p> <p>– Environmental Impact Assessment, Sustainable Development.</p> <p>– Natural Resources, Water resources – Availability &amp; Quality aspects, Water borne diseases &amp; water induced diseases, Fluoride problem in drinking water Mineral resources, Forest Wealth Material Cycles – Carbon Cycle, Nitrogen Cycle &amp; Sulphur Cycle.</p> <p>– Energy – Different types of energy, Conventional sources &amp; NonConventional sources of energy. Solar energy, Hydro electric energy, Wind Energy, Nuclear energy, Biomass &amp; Biogas Fossil Fuels, Hydrogen as an alternative energy. – Environmental Pollution – Water Pollution, Noise pollution, Land Pollution, Public Health Aspects.</p> <p>– Global Environmental Issues: Population Growth, Urbanization, Land Management, Water &amp; Waste Water Management.</p> <p>– Air Pollution &amp; Automobile Pollution: Definition, Effects – Global Warming, Acid rain &amp; Ozone layer depletion, controlling measures.</p>

	<p>→ Solid Waste Management, E - Waste Management &amp; Biomedical Waste Management -Sources, Characteristics &amp; Disposal methods.</p> <p>→ Introduction to GIS &amp; Remote sensing, Applications of GIS &amp; Remote Sensing in Environmental Engineering Practices.</p> <p>→ Environmental Acts &amp; Regulations, Role of government, Legal aspects, Role of Nongovernmental Organizations (NGOs), Environmental Education &amp; Women Education.</p>
<p>Awareness on climate change and environment</p>	<p>NSS and various platforms are conducted to bring awareness of these issues of climate change and environment education which include Plastic free campus &amp; reusable plates in canteen and food court.</p> <ul style="list-style-type: none"> <li>□ Swachh Bharath Abhiyan</li> <li>□ Students of MBA took initiative in promoting social awareness of waste management through installing litter boxes in the campus.</li> <li>□ Industrial visit to Sewage treatment plant</li> <li>□ Kashmir flood relief fund Drive</li> <li>□ RNS Road Run by Mountaineering club to support victims of Nepal earth quake.</li> </ul> <p>Stepup-----</p>
<p>Professional Ethics &amp; Human Rights’ with the subject code ‘15CPH18/15CPH28’</p>	<p>The objectives of this course are: □ To understand human rights and its implications □ To have an awareness about basic human rights in India The curriculum of the course is designed to address the specific topics such as □ Human Rights – Meaning and Definitions, Legislation □ Specific Themes in Human Rights □ Working of National Human Rights Commission in India □ Preamble to Indian Constitution Fundamental Rights &amp; its limitations □ Fundamental Duties □ Special Provision for SC &amp; ST □ Special Provision for Women, Children &amp; Backward Classes □ Emergency Provisions</p>



StepUp Walkathon and Marathon

