VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI
B.E. in Robotics & Artificial Intelligence
Scheme of Teaching and Examinations 2022
Outcome Based Education (OBE) and Choice Based Credit System (CBCS)
(Effective from the academic year 2024-25)

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	HSMS	BRI501	Managerial Economics for Robotics	TD- ME PSB -ME	3	0	0		03	50	50	100	3
2	IPCC	BRI502	Hydraulics & Pneumatics	TD:ME PSB:ME	3	0	2		03	50	50	100	4
3	PCC	BRI503	Fundamentals of AI for Robots	TD:CSE PSB:CSE	4	0	0		03	50	50	100	4
4	PCCL	BRIL504	Artificial Intelligence Lab	TD:CSE PSB:CSE	0	0	2		03	50	50	100	1
5	PEC	BRI515x	Professional Elective Course	Concerned Department	3	0	0		03	50	50	100	3
6	PROJ	BRI586	Mini Project	Concerned Department	0	0	4		03	100		100	2
7	AEC	BRMK557	Research Methodology and IPR	TD: Any Department PSB: As Defined by University	2	2	0		02	50	50	100	3
8	MC	BESK508	Environmental Studies	TD: Civil/ Environmental/Chemistry /Biotech PSB: Civil Engineering	2	0	0		02	50	50	100	2
9	MC	BNSK559	National Service Scheme (NSS)	NSS coordinator	0	0	2			100		100	0
		BPEK559	Physical Education (PE) (Sports and Athletics)	Physical Education Director									
		BYOK559	Yoga	Yoga Teacher									
									Total	500	300	800	22

Professional Elective Course			
BRI515A	Introduction to PLC	BRI515C	Data Analytics
BRI515B	Finite Element Analysis	BRI515D	Simulation Modelling and Analysis

PCC: Professional Core Course, **PCCL**: Professional Core Course laboratory, **UHV**: Universal Human Value Course, **MC**: Mandatory Course (Non-credit), **AEC**: Ability Enhancement Course, **SEC**: Skill Enhancement Course, **L:** Lecture, **T**: Tutorial, **P**: Practical **S= SDA**: Skill Development Activity, **CIE**: Continuous Internal Evaluation, **SEE**: Semester End Evaluation. **K :** The letter in the course code indicates common to al the stream of engineering. **PROJ**: Project /Mini Project. **PEC**: Professional Elective Course
Professional Core Course (IPCC): Refers to Professional Core Course Theory Integrated with practical of the same course. Credit for IPCC can be 04 and its Teaching–Learning hours (L : T : P) can be considered as (3 : 0 : 2) or (2 : 2 : 2). The theory part of the IPCC shall be evaluated both by CIE and SEE. The practical part shall be evaluated by only CIE (no SEE). However, questions from the practical part of IPCC shall be included in the SEE question paper. For more details, the regulation governing the Degree of Bachelor of Engineering /Technology (B.E./B.Tech.) 2022-23
National Service Scheme /Physical Education/Yoga: All students have to register for any one of the courses namely National Service Scheme (NSS), Physical Education (PE)(Sports and Athletics), and Yoga(YOG) with the concerned coordinator of the course during the first week of III semesters. Activities shall be carried out between III semester to the VI semester (for 4 semesters). Successful completion of the registered course and requisite CIE score 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 calendar prepared for the NSS, PE, and Yoga activities. These courses shall not be considered for vertical progression as well as for the calculation of SGPA and CGPA, but completion of the course is mandatory for the award of degree.
Mini-project work: Mini Project is a laboratory-oriented/hands on course that will provide a platform to students to enhance their practical knowledge and skills by the development of small systems/applications etc. Based on the ability/abilities of the student/s and recommendations of the mentor, a single discipline or a multidisciplinary Mini- project can be assigned to an individual student or to a group having not more than 4 students. **CIE procedure for Mini-project:** **(i) Single discipline:** The CIE marks shall be awarded by a committee consisting of the Head of the concerned Department and two faculty members of the Department, one of them being the Guide. The CIE marks awarded for the Mini-project work shall be based on the evaluation of the project report, project presentation skill, and question and answer session in the ratio of 50:25:25. The marks awarded for the project report shall be the same for all the batches mates. **(ii) Interdisciplinary:** Continuous Internal Evaluation shall be group-wise at the college level with the participation of all the guides of the project. The CIE marks awarded for the Mini-project, shall be based on the evaluation of the project report, project presentation skill, and question and answer session in the ratio 50:25:25. The marks awarded for the project report shall be the same for all the batch mates. **No SEE component for Mini-Project.**
Professional Elective Courses (PEC): A professional elective (PEC) course is intended to enhance the depth and breadth of educational experience in the Engineering and Technology curriculum. Multidisciplinary courses that are added supplement the latest trend and advanced technology in the selected stream of engineering. Each group will provide an option to select one course. The minimum number of students' strengths for offering a professional elective is 10. However, this conditional shall not be applicable to cases where the admission to the program is less than 10.

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VI SEMESTER

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					Theory Lecture	Tutorial	Practical / Drawing	Self -Study	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
					L	T	P	S					
1	PCC	BRI601	Robot Operating System	TD- CSE PSB -CSE	4	0	0		03	50	50	100	4
2	IPCC	BRI602	Digital Image Processing	TD- ECE/CSE PSB –ECE/CSE	3	0	2		03	50	50	100	4
3	PEC	BRI613x	Professional Elective Course	Concerned Department	3	0	0		03	50	50	100	3
4	OEC	BRI654x	Open Elective Course	Concerned Department	3	0	0		03	50	50	100	3
5	PROJ	BRI685	Project Phase I		0	0	4		03	100	--	100	2
6	PCCL	BRIL606	Virtual Instrumentation & Automation Lab	TD: CSE, ECE PSB: CS&E	0	0	2		03	50	50	100	1
7	AEC/SDC	BRI657x	Ability Enhancement Course/Skill Development Course V	RI/ME	If the course is offered as a Theory				01	50	50	100	1
					1	0	0						
					If course is offered as a practical								
					0	0	2						
8	MC	BNSK658	National Service Scheme (NSS)	NSS coordinator	0	0	2			100	---	100	0
		BPEK658	Physical Education (PE) (Sports and Athletics)	Physical Education Director									
		BYOK658	Yoga	Yoga Teacher									
9	IKS	BIKS609	Indian Knowledge System		1	0	0		01	100	0	100	0
									Total	500	300	800	18

Professional Elective Course			
BRI613A	Industry 4.0 and IIOT	BRI613C	Autonomous Robots

BRI613B	Intelligent Manufacturing	BRI613D	Total Quality Management
Open Elective Course			
BRI654A	Project Management	BRI654C	Fundamentals of Robotics
BRI654B	Unmanned Arial Vehicle	BRI654D	Operations Research
Ability Enhancement Course / Skill Enhancement Course-V			
BRI657A	Application of Raspberry Pi Controllers	BRI657C	FEA Lab
BRI657B	R Programming	BRI657D	Ethics and Public Policy for AI

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Professional Elective Courses (PEC): A professional elective (PEC) course is intended to enhance the depth and breadth of educational experience in the Engineering and Technology curriculum. Multidisciplinary courses that are added supplement the latest trend and advanced technology in the selected stream of engineering. Each group will provide an option to select one course. The minimum number of students' strengths for offering professional electives is 10. However, this conditional shall not be applicable to cases where the admission to the program is less than 10.

Open Elective Courses:
Students belonging to a particular stream of Engineering and Technology are not entitled to the open electives offered by their parent Department. However, they can opt for an elective offered by other Departments, provided they satisfy the prerequisite condition if any. Registration to open electives shall be documented under the guidance of the Program Coordinator/ Advisor/Mentor. The minimum numbers of students' strength for offering Open Elective Course is 10. However, this condition shall not be applicable to class where the admission to the program is less than 10.

Project Phase-I : Students have to discuss with the mentor /guide and with their help he/she has to complete the literature survey and prepare the report and finally define the problem statement for the project work.