

Punyashlok Ahilyadevi Holkar Solapur University, Solapur



NAAC Accredited-2015
'B' Grade (CGPA 2.62)

Name of the Faculty: Science and Technology

CHOICE BASED CREDIT SYSTEM

Structure: Mechanical Engineering

Name of the Course: Honors Degree

(Syllabus to be implemented from w.e.f. 2021-2022)

Punyashlok Ahilyadevi Holkar Solapur University, Solapur
Faculty of Science & Technology
Mechanical Engineering
S.Y. B. Tech. Semester-IV
Choice Based Credit System (CBCS) Structure for B. Tech.
Honors in Robotics Engineering
w.e.f. Academic Year 2021-2022

Theory Courses										
<i>Course Code</i>	<i>Name of Laboratory/Tutorial Course</i>	<i>Hrs./week</i>				<i>Credits</i>	<i>Examination Scheme</i>			
		<i>L</i>	<i>T</i>	<i>P</i>	<i>D</i>		<i>ISE</i>	<i>ESE</i>	<i>ICA</i>	<i>Total</i>
<i>Hn411</i>	Industrial Robotics	3				3	30	70		100
	Sub Total	3				3	30	70	0	100

Laboratory/Tutorial Courses											
<i>Course Code</i>	<i>Name of Laboratory/Tutorial Course</i>	<i>Hrs./week</i>				<i>Credits</i>	<i>Examination Scheme</i>				
		<i>L</i>	<i>T</i>	<i>P</i>	<i>D</i>		<i>ISE</i>	<i>ESE</i>		<i>ICA</i>	<i>Total</i>
								<i>POE</i>	<i>OE</i>		
<i>Hn411</i>	Industrial Robotics		1			1				25	25
	Sub Total		1			1				25	25
	Grand Total	3	1			4				25	125

Punyashlok Ahilyadevi Holkar Solapur University, Solapur
Faculty of Science & Technology
Mechanical Engineering
S.Y. B. Tech. Semester-IV
Choice Based Credit System (CBCS) Structure for B.Tech.
Honors in 3-D Printing Engineering
w.e.f. Academic Year 2021-2022

Theory Courses										
<i>Course Code</i>	<i>Name of Laboratory/Tutorial Course</i>	<i>Hrs./week</i>				<i>Credits</i>	<i>Examination Scheme</i>			
		<i>L</i>	<i>T</i>	<i>P</i>	<i>D</i>		<i>ISE</i>	<i>ESE</i>	<i>ICA</i>	<i>Total</i>
<i>Hn421</i>	Introduction to 3D Printing	3				3	30	70		100
	Sub Total	3				3	30	70	0	100

Laboratory/Tutorial Courses											
<i>Course Code</i>	<i>Name of Laboratory/Tutorial Course</i>	<i>Hrs./week</i>				<i>Credits</i>	<i>Examination Scheme</i>				
		<i>L</i>	<i>T</i>	<i>P</i>	<i>D</i>		<i>ISE</i>	<i>ESE</i>		<i>ICA</i>	<i>Total</i>
								<i>POE</i>	<i>OE</i>		
<i>Hn421</i>	Introduction to 3D Printing		1			1				25	25
	Sub Total		1			1				25	25
	Grand Total	3	1			4				25	125

Punyashlok Ahilyadevi Holkar Solapur University, Solapur
Faculty of Science & Technology
Mechanical Engineering
S.Y. B. Tech. Semester-IV

Choice Based Credit System (CBCS) Structure for B. Tech.
Honors in Energy Engineering
w.e.f. Academic Year 2021-2022

Theory Courses										
<i>Course Code</i>	<i>Name of Laboratory/Tutorial Course</i>	<i>Hrs./week</i>				<i>Credits</i>	<i>Examination Scheme</i>			
		<i>L</i>	<i>T</i>	<i>P</i>	<i>D</i>		<i>ISE</i>	<i>ESE</i>	<i>ICA</i>	<i>Total</i>
<i>Hn431</i>	Renewable Energy Sources	3				3	30	70		100
	Sub Total	3				3	30	70	0	100

Laboratory/Tutorial Courses											
<i>Course Code</i>	<i>Name of Laboratory/Tutorial Course</i>	<i>Hrs./week</i>				<i>Credits</i>	<i>Examination Scheme</i>				
		<i>L</i>	<i>T</i>	<i>P</i>	<i>D</i>		<i>ISE</i>	<i>ESE</i>		<i>ICA</i>	<i>Total</i>
								<i>POE</i>	<i>OE</i>		
<i>Hn431</i>	Renewable Energy Sources		1			1				25	25
	Sub Total		1			1				25	25
	Grand Total	3	1			4				25	125

Punyashlok Ahilyadevi Holkar Solapur University, Solapur
Faculty of Science & Technology
Mechanical Engineering
S.Y. B. Tech. Semester-IV
Choice Based Credit System (CBCS) Structure for B. Tech.
Honors in Electric Vehicles Engineering
w.e.f. Academic Year 2021-2022

Theory Courses										
<i>Course Code</i>	<i>Name of Laboratory/Tutorial Course</i>	<i>Hrs./week</i>				<i>Credits</i>	<i>Examination Scheme</i>			
		<i>L</i>	<i>T</i>	<i>P</i>	<i>D</i>		<i>ISE</i>	<i>ESE</i>	<i>ICA</i>	<i>Total</i>
<i>Hn441</i>	Introduction to Automobile Engineering	3				3	30	70		100
	Sub Total	3				3	30	70	0	100

Laboratory/Tutorial Courses											
<i>Course Code</i>	<i>Name of Laboratory/Tutorial Course</i>	<i>Hrs./week</i>				<i>Credits</i>	<i>Examination Scheme</i>				
		<i>L</i>	<i>T</i>	<i>P</i>	<i>D</i>		<i>ISE</i>	<i>ESE</i>		<i>ICA</i>	<i>Total</i>
								<i>POE</i>	<i>OE</i>		
<i>Hn441</i>	Introduction to Automobile Engineering		1			1				25	25
	Sub Total		1			1				25	25
	Grand Total	3	1			4				25	125

Punyashlok Ahilyadevi Holkar Solapur University, Solapur
Faculty of Science & Technology
Mechanical Engineering
T.Y. B. Tech. Semester-V
Choice Based Credit System (CBCS) Structure for B. Tech.
Honors in Robotics Engineering
w.e.f. Academic Year 2022-2023

Theory Courses										
<i>Course Code</i>	<i>Name of Laboratory/Tutorial Course</i>	<i>Hrs./week</i>				<i>Credits</i>	<i>Examination Scheme</i>			
		<i>L</i>	<i>T</i>	<i>P</i>	<i>D</i>		<i>ISE</i>	<i>ESE</i>	<i>ICA</i>	<i>Total</i>
<i>Hn512</i>	Machine Vision	3				3	30	70		100
	Sub Total	3		1		3	30	70	0	100

Laboratory/Tutorial Courses											
<i>Course Code</i>	<i>Name of Laboratory/Tutorial Course</i>	<i>Hrs./week</i>				<i>Credits</i>	<i>Examination Scheme</i>				
		<i>L</i>	<i>T</i>	<i>P</i>	<i>D</i>		<i>ISE</i>	<i>ESE</i>		<i>ICA</i>	<i>Total</i>
								<i>POE</i>	<i>OE</i>		
<i>Hn512</i>	Machine Vision			2		1				25	75
	Seminar			2		1				50	
	Sub Total			4		2				75	75
	Grand Total	3		4		5				75	175

Punyashlok Ahilyadevi Holkar Solapur University, Solapur
Faculty of Science & Technology
Mechanical Engineering
T.Y. B. Tech. Semester-V
Choice Based Credit System (CBCS) Structure for B. Tech.
Honors in 3-D Printing Engineering
w.e.f. Academic Year 2022-2023

Theory Courses										
<i>Course Code</i>	<i>Name of Laboratory/Tutorial Course</i>	<i>Hrs./week</i>				<i>Credits</i>	<i>Examination Scheme</i>			
		<i>L</i>	<i>T</i>	<i>P</i>	<i>D</i>		<i>ISE</i>	<i>ESE</i>	<i>ICA</i>	<i>Total</i>
<i>Hn522</i>	3D Printing Materials	3				3	30	70		100
	Sub Total	3		1		3	30	70	0	100

Laboratory/Tutorial Courses											
<i>Course Code</i>	<i>Name of Laboratory/Tutorial Course</i>	<i>Hrs./week</i>				<i>Credits</i>	<i>Examination Scheme</i>				
		<i>L</i>	<i>T</i>	<i>P</i>	<i>D</i>		<i>ISE</i>	<i>ESE</i>		<i>ICA</i>	<i>Total</i>
								<i>POE</i>	<i>OE</i>		
<i>Hn522</i>	3D Printing Materials			2		1				25	75
	Seminar			2		1				50	
	Sub Total			4		2				75	75
	Grand Total	3		4		5				75	175

Punyashlok Ahilyadevi Holkar Solapur University, Solapur
Faculty of Science & Technology
Mechanical Engineering
T.Y. B. Tech. Semester-V
Choice Based Credit System (CBCS) Structure for B. Tech.
Honors in Energy Engineering
w.e.f. Academic Year 2022-2023

Theory Courses										
<i>Course Code</i>	<i>Name of Laboratory/Tutorial Course</i>	<i>Hrs./week</i>				<i>Credits</i>	<i>Examination Scheme</i>			
		<i>L</i>	<i>T</i>	<i>P</i>	<i>D</i>		<i>ISE</i>	<i>ESE</i>	<i>ICA</i>	<i>Total</i>
<i>Hn532</i>	Energy Conservation, Audit and Management	3				3	30	70		100
	Sub Total	3		1		3	30	70	0	100

Laboratory/Tutorial Courses											
<i>Course Code</i>	<i>Name of Laboratory/Tutorial Course</i>	<i>Hrs./week</i>				<i>Credits</i>	<i>Examination Scheme</i>				
		<i>L</i>	<i>T</i>	<i>P</i>	<i>D</i>		<i>ISE</i>	<i>ESE</i>		<i>ICA</i>	<i>Total</i>
								<i>POE</i>	<i>OE</i>		
<i>Hn532</i>	Energy Conservation, Audit and Management			2		1				25	75
	Seminar			2		1				50	
	Sub Total			4		2				75	75
	Grand Total	3		4		5				75	175

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T.Y. B. Tech. Semester-V
Choice Based Credit System (CBCS) Structure for B. Tech.
Honors in Electric Vehicles Engineering
w.e.f. Academic Year 2022-2023

Theory Courses										
<i>Course Code</i>	<i>Name of Laboratory/Tutorial Course</i>	<i>Hrs./week</i>				<i>Credits</i>	<i>Examination Scheme</i>			
		<i>L</i>	<i>T</i>	<i>P</i>	<i>D</i>		<i>ISE</i>	<i>ESE</i>	<i>ICA</i>	<i>Total</i>
<i>Hn542</i>	Introduction to Electric and Hybrid Vehicles	3				3	30	70		100
	Sub Total	3		1		3	30	70	0	100

Laboratory/Tutorial Courses											
<i>Course Code</i>	<i>Name of Laboratory/Tutorial Course</i>	<i>Hrs./week</i>				<i>Credits</i>	<i>Examination Scheme</i>				
		<i>L</i>	<i>T</i>	<i>P</i>	<i>D</i>		<i>ISE</i>	<i>ESE</i>		<i>ICA</i>	<i>Total</i>
								<i>POE</i>	<i>OE</i>		
<i>Hn542</i>	Introduction to Electric and Hybrid Vehicles			2		1				25	75
	Seminar			2		1				50	
	Sub Total			4		2				75	75
	Grand Total	3		4		5				75	175

Punyashlok Ahilyadevi Holkar Solapur University, Solapur
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T.Y. B. Tech. Semester-VI
Choice Based Credit System (CBCS) Structure for B. Tech.
Honors in Robotics Engineering
w.e.f. Academic Year 2022-2023

Theory Courses										
<i>Course Code</i>	<i>Name of Laboratory/Tutorial Course</i>	<i>Hrs./week</i>				<i>Credits</i>	<i>Examination Scheme</i>			
		<i>L</i>	<i>T</i>	<i>P</i>	<i>D</i>		<i>ISE</i>	<i>ESE</i>	<i>ICA</i>	<i>Total</i>
Hn613	Industrial Networks and Controllers	4				4	30	70		100
	Sub Total	4				4	30	70	0	100

Laboratory/Tutorial Courses											
<i>Course Code</i>	<i>Name of Laboratory/Tutorial Course</i>	<i>Hrs./week</i>				<i>Credits</i>	<i>Examination Scheme</i>				
		<i>L</i>	<i>T</i>	<i>P</i>	<i>D</i>		<i>ISE</i>	<i>ESE</i>		<i>ICA</i>	<i>Total</i>
								<i>POE</i>	<i>OE</i>		
Hn613	Industrial Networks and Controllers			2		1				25	25
	Sub Total			2		1				25	25
	Grand Total	4		2		5				25	125

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Mechanical Engineering
T.Y. B. Tech. Semester-VI
Choice Based Credit System (CBCS) Structure for B. Tech.
Honors in 3-D Printing Engineering
w.e.f. Academic Year 2022-2023

Theory Courses										
<i>Course Code</i>	<i>Name of Laboratory/Tutorial Course</i>	<i>Hrs./week</i>				<i>Credits</i>	<i>Examination Scheme</i>			
		<i>L</i>	<i>T</i>	<i>P</i>	<i>D</i>		<i>ISE</i>	<i>ESE</i>	<i>ICA</i>	<i>Total</i>
<i>Hn623</i>	3D Printing Hardware and Software	4				4	30	70		100
	Sub Total	4				4	30	70	0	100

Laboratory/Tutorial Courses											
<i>Course Code</i>	<i>Name of Laboratory/Tutorial Course</i>	<i>Hrs./week</i>				<i>Credits</i>	<i>Examination Scheme</i>				
		<i>L</i>	<i>T</i>	<i>P</i>	<i>D</i>		<i>ISE</i>	<i>ESE</i>		<i>ICA</i>	<i>Total</i>
								<i>POE</i>	<i>OE</i>		
<i>Hn623</i>	3D Printing Hardware and Software			2		1				25	25
	Sub Total			2		1				25	25
	Grand Total	4		2		5				25	125

Punyashlok Ahilyadevi Holkar Solapur University, Solapur
Faculty of Science & Technology
Mechanical Engineering
T.Y. B. Tech. Semester-VI
Choice Based Credit System (CBCS) Structure for B. Tech.
Honors in Energy Engineering
w.e.f. Academic Year 2022-2023

Theory Courses										
<i>Course Code</i>	<i>Name of Laboratory/Tutorial Course</i>	<i>Hrs./week</i>				<i>Credits</i>	<i>Examination Scheme</i>			
		<i>L</i>	<i>T</i>	<i>P</i>	<i>D</i>		<i>ISE</i>	<i>ESE</i>	<i>ICA</i>	<i>Total</i>
<i>Hn633</i>	Energy Conversion Systems	4				4	30	70		100
	Sub Total	4				4	30	70	0	100

Laboratory/Tutorial Courses											
<i>Course Code</i>	<i>Name of Laboratory/Tutorial Course</i>	<i>Hrs./week</i>				<i>Credits</i>	<i>Examination Scheme</i>				
		<i>L</i>	<i>T</i>	<i>P</i>	<i>D</i>		<i>ISE</i>	<i>ESE</i>		<i>ICA</i>	<i>Total</i>
								<i>POE</i>	<i>OE</i>		
<i>Hn633</i>	Energy Conversion Systems			2		1				25	25
	Sub Total			2		1				25	25
	Grand Total	4		2		5				25	125

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Faculty of Science & Technology
Mechanical Engineering
T.Y. B. Tech. Semester-VI
Choice Based Credit System (CBCS) Structure for B. Tech.
Honors in Electric Vehicles Engineering
w.e.f. Academic Year 2022-2023

Theory Courses										
<i>Course Code</i>	<i>Name of Laboratory/Tutorial Course</i>	<i>Hrs./week</i>				<i>Credits</i>	<i>Examination Scheme</i>			
		<i>L</i>	<i>T</i>	<i>P</i>	<i>D</i>		<i>ISE</i>	<i>ESE</i>	<i>ICA</i>	<i>Total</i>
<i>Hn643</i>	Battery Technology and Charging Infrastructure	4				4	30	70		100
	Sub Total	4				4	30	70	0	100

Laboratory/Tutorial Courses											
<i>Course Code</i>	<i>Name of Laboratory/Tutorial Course</i>	<i>Hrs./week</i>				<i>Credits</i>	<i>Examination Scheme</i>				
		<i>L</i>	<i>T</i>	<i>P</i>	<i>D</i>		<i>ISE</i>	<i>ESE</i>		<i>ICA</i>	<i>Total</i>
								<i>POE</i>	<i>OE</i>		
<i>Hn643</i>	Battery Technology and Charging Infrastructure			2		1			25	25	
	Sub Total			2		1			25	25	
	Grand Total	4		2		5			25	125	

Punyashlok Ahilyadevi Holkar Solapur University, Solapur
Faculty of Science & Technology
Mechanical Engineering
S.Y. B. Tech. Semester-VII
Choice Based Credit System (CBCS) Structure for B. Tech.
Honors in Robotics Engineering
w.e.f. Academic Year 2023-2024

Theory Courses										
<i>Course Code</i>	<i>Name of Laboratory/Tutorial Course</i>	<i>Hrs./week</i>				<i>Credits</i>	<i>Examination Scheme</i>			
		<i>L</i>	<i>T</i>	<i>P</i>	<i>D</i>		<i>ISE</i>	<i>ESE</i>	<i>ICA</i>	<i>Total</i>
<i>Hn714</i>	Advanced topics in Robotics	3				3	30	70		100
	Sub Total	3				3	30	70		100

Laboratory/Tutorial Courses											
<i>Course Code</i>	<i>Name of Laboratory/Tutorial Course</i>	<i>Hrs./week</i>				<i>Credits</i>	<i>Examination Scheme</i>				
		<i>L</i>	<i>T</i>	<i>P</i>	<i>D</i>		<i>ISE</i>	<i>ESE</i>		<i>ICA</i>	<i>Total</i>
								<i>POE</i>	<i>OE</i>		
<i>Hn714</i>	Advanced topics in Robotics		1			1				25	
	Sub Total		1			1				25	
	Grand Total	3	1			4				125	

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Mechanical Engineering
S.Y. B. Tech. Semester-VII
Choice Based Credit System (CBCS) Structure for B. Tech.
Honors in 3-D Printing Engineering
w.e.f. Academic Year 2023-2024

Theory Courses										
<i>Course Code</i>	<i>Name of Laboratory/Tutorial Course</i>	<i>Hrs./week</i>				<i>Credits</i>	<i>Examination Scheme</i>			
		<i>L</i>	<i>T</i>	<i>P</i>	<i>D</i>		<i>ISE</i>	<i>ESE</i>	<i>ICA</i>	<i>Total</i>
<i>Hn724</i>	Advanced topics on 3D Printing	3				3	30	70		100
	Sub Total	3				3	30	70		100

Laboratory/Tutorial Courses											
<i>Course Code</i>	<i>Name of Laboratory/Tutorial Course</i>	<i>Hrs./week</i>				<i>Credits</i>	<i>Examination Scheme</i>				
		<i>L</i>	<i>T</i>	<i>P</i>	<i>D</i>		<i>ISE</i>	<i>ESE</i>		<i>ICA</i>	<i>Total</i>
								<i>POE</i>	<i>OE</i>		
<i>Hn724</i>	Advanced topics on 3D Printing		1			1				25	25
	Sub Total		1			1				25	25
	Grand Total	3	1			4				25	125

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Mechanical Engineering
S.Y. B. Tech. Semester-VII
Choice Based Credit System (CBCS) Structure for B. Tech.
Honors in Energy Engineering
w.e.f. Academic Year 2023-2024

Theory Courses										
<i>Course Code</i>	<i>Name of Laboratory/Tutorial Course</i>	<i>Hrs./week</i>				<i>Credits</i>	<i>Examination Scheme</i>			
		<i>L</i>	<i>T</i>	<i>P</i>	<i>D</i>		<i>ISE</i>	<i>ESE</i>	<i>ICA</i>	<i>Total</i>
<i>Hn734</i>	Energy Resources, Economics and Environment	<i>3</i>				<i>3</i>	<i>30</i>	<i>70</i>		<i>100</i>
	Sub Total	3				3	30	70		100

Laboratory/Tutorial Courses											
<i>Course Code</i>	<i>Name of Laboratory/Tutorial Course</i>	<i>Hrs./week</i>				<i>Credits</i>	<i>Examination Scheme</i>				
		<i>L</i>	<i>T</i>	<i>P</i>	<i>D</i>		<i>ISE</i>	<i>ESE</i>		<i>ICA</i>	<i>Total</i>
								<i>POE</i>	<i>OE</i>		
<i>Hn734</i>	Energy Resources, Economics and Environment		<i>1</i>			<i>1</i>			<i>25</i>	<i>25</i>	
	Sub Total		1			1			25	25	
	Grand Total	3	1			4			25	125	

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S.Y. B. Tech. Semester-VII
Choice Based Credit System (CBCS) Structure for B. Tech.
Honors in Electric Vehicles Engineering
w.e.f. Academic Year 2023-2024

Theory Courses										
<i>Course Code</i>	<i>Name of Laboratory/Tutorial Course</i>	<i>Hrs./week</i>				<i>Credits</i>	<i>Examination Scheme</i>			
		<i>L</i>	<i>T</i>	<i>P</i>	<i>D</i>		<i>ISE</i>	<i>ESE</i>	<i>ICA</i>	<i>Total</i>
<i>Hn744</i>	Advanced Topics in Electric Vehicles	3				3	30	70		100
	Sub Total	3				3	30	70		100

Laboratory/Tutorial Courses											
<i>Course Code</i>	<i>Name of Laboratory/Tutorial Course</i>	<i>Hrs./week</i>				<i>Credits</i>	<i>Examination Scheme</i>				
		<i>L</i>	<i>T</i>	<i>P</i>	<i>D</i>		<i>ISE</i>	<i>ESE</i>		<i>ICA</i>	<i>Total</i>
								<i>POE</i>	<i>OE</i>		
<i>Hn744</i>	Advanced Topics in Electric Vehicles		1			1			25	25	
	Sub Total		1			1			25	25	
	Grand Total	3	1			4			25	125	

Note:

1. Curriculum of Honors specialization can be common between different branches of Engineering.
2. Total Credits to be earned for each Honors specialization will be 18 which will be over and above to the overall credits earned in their regular Curriculum.
3. Students can opt for only one Honors specialization along with their regular curriculum
4. Students are advised to take their mini-project (at Semester –VI) in the area of their Honors specialization.