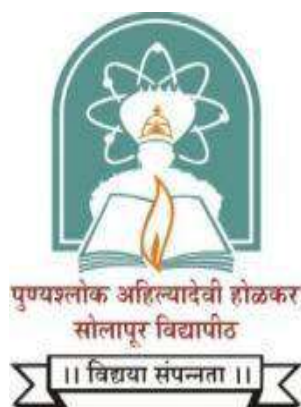


**Punyashlok Ahilyadevi Holkar Solapur University, Solapur**



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**

<b>Theory Courses</b>										
<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											
Course Code	Name of Laboratory/Tutorial Course	Hrs./week				Credits	Examination Scheme				
		L	T	P	D		ISE	ESE		ICA	Total
								POE	OE		
Hn411	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**

<b>Theory Courses</b>										
<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											
Course Code	Name of Laboratory/Tutorial Course	Hrs./week				Credits	Examination Scheme				
		L	T	P	D		ISE	ESE		ICA	Total
								POE	OE		
Hn421	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*

<b>Theory Courses</b>										
<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											
Course Code	Name of Laboratory/Tutorial Course	Hrs./week				Credits	Examination Scheme				
		L	T	P	D		ISE	ESE		ICA	Total
								POE	OE		
Hn431	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*

<b>Theory Courses</b>										
<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>
<b>Hn441</b>	Introduction to Automobile Engineering	<b>3</b>				<b>3</b>	<b>30</b>	<b>70</b>		<b>100</b>
	<b>Sub Total</b>	<b>3</b>				<b>3</b>	<b>30</b>	<b>70</b>	<b>0</b>	<b>100</b>

Laboratory/Tutorial Courses											
Course Code	Name of Laboratory/Tutorial Course	Hrs./week				Credits	Examination Scheme				
		L	T	P	D		ISE	ESE		ICA	Total
								POE	OE		
Hn441	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										
Course Code	Name of Laboratory/Tutorial Course	Hrs./week				Credits	Examination Scheme			
		L	T	P	D		ISE	ESE	ICA	Total
Hn512	Machine Vision	3				3	30	70		100
	Sub Total	3		1		3	30	70	0	100

Laboratory/Tutorial Courses											
Course Code	Name of Laboratory/Tutorial Course	Hrs./week				Credits	Examination Scheme				
		L	T	P	D		ISE	ESE		ICA	Total
								POE	OE		
Hn512	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**

<b>Theory Courses</b>										
<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											
Course Code	Name of Laboratory/Tutorial Course	Hrs./week				Credits	Examination Scheme				
		L	T	P	D		ISE	ESE		ICA	Total
								POE	OE		
Hn522	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										
Course Code	Name of Laboratory/Tutorial Course	Hrs./week				Credits	Examination Scheme			
		L	T	P	D		ISE	ESE	ICA	Total
Hn532	Energy Conservation, Audit and Management	3				3	30	70		100
	Sub Total	3		1		3	30	70	0	100

Laboratory/Tutorial Courses											
Course Code	Name of Laboratory/Tutorial Course	Hrs./week				Credits	Examination Scheme				
		L	T	P	D		ISE	ESE		ICA	Total
								POE	OE		
Hn532	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



**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 Electric Vehicles Engineering*  
*w.e.f. Academic Year 2022-2023*

<b>Theory Courses</b>										
<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>
<b>Hn542</b>	Introduction to Electric and Hybrid Vehicles	<b>3</b>				3	<b>30</b>	<b>70</b>		<b>100</b>
	<b>Sub Total</b>	<b>3</b>		<b>1</b>		3	<b>30</b>	<b>70</b>	<b>0</b>	<b>100</b>

Laboratory/Tutorial Courses											
Course Code	Name of Laboratory/Tutorial Course	Hrs./week				Credits	Examination Scheme				
		L	T	P	D		ISE	ESE		ICA	Total
								POE	OE		
Hn542	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**  
**Faculty of Science & Technology**  
**Mechanical Engineering**  
**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**

<b>Theory Courses</b>										
<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>
<b>Hn613</b>	Industrial Networks and Controllers	4				4	30	70		100
	Sub Total	4				4	30	70	0	100

Laboratory/Tutorial Courses											
Course Code	Name of Laboratory/Tutorial Course	Hrs./week				Credits	Examination Scheme				
		L	T	P	D		ISE	ESE		ICA	Total
								POE	OE		
Hn613	Industrial Networks and Controllers			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 3-D Printing Engineering**  
**w.e.f. Academic Year 2022-2023**

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

Laboratory/Tutorial Courses											
Course Code	Name of Laboratory/Tutorial Course	Hrs./week				Credits	Examination Scheme				
		L	T	P	D		ISE	ESE		ICA	Total
								POE	OE		
Hn623	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**

<b>Theory Courses</b>										
<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											
Course Code	Name of Laboratory/Tutorial Course	Hrs./week				Credits	Examination Scheme				
		L	T	P	D		ISE	ESE		ICA	Total
								POE	OE		
Hn633	Energy Conversion Systems			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 Electric Vehicles Engineering**  
**w.e.f. Academic Year 2022-2023**

<b>Theory Courses</b>										
<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>
<b>Hn643</b>	Battery Technology and Charging Infrastructure	<b>4</b>				<b>4</b>	<b>30</b>	<b>70</b>		<b>100</b>
	<b>Sub Total</b>	<b>4</b>				<b>4</b>	<b>30</b>	<b>70</b>	<b>0</b>	<b>100</b>

Laboratory/Tutorial Courses											
Course Code	Name of Laboratory/Tutorial Course	Hrs./week				Credits	Examination Scheme				
		L	T	P	D		ISE	ESE		ICA	Total
								POE	OE		
Hn643	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**

<b>Theory Courses</b>										
<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>
<b>Hn714</b>	Advanced topics in Robotics	<b>3</b>				3	<b>30</b>	<b>70</b>		<b>100</b>
	<b>Sub Total</b>	<b>3</b>				3	<b>30</b>	<b>70</b>		<b>100</b>

Laboratory/Tutorial Courses											
Course Code	Name of Laboratory/Tutorial Course	Hrs./week				Credits	Examination Scheme				
		L	T	P	D		ISE	ESE		ICA	Total
								POE	OE		
Hn714	Advanced topics in 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-VII**  
**Choice Based Credit System (CBCS) Structure for B. Tech.**  
**Honors in 3-D Printing Engineering**  
**w.e.f. Academic Year 2023-2024**

<b>Theory Courses</b>										
<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>
<b>Hn724</b>	Advanced topics on 3D Printing	<b>3</b>				<b>3</b>	<b>30</b>	<b>70</b>		<b>100</b>
	<b>Sub Total</b>	<b>3</b>				<b>3</b>	<b>30</b>	<b>70</b>		<b>100</b>

Laboratory/Tutorial Courses											
Course Code	Name of Laboratory/Tutorial Course	Hrs./week				Credits	Examination Scheme				
		L	T	P	D		ISE	ESE		ICA	Total
								POE	OE		
Hn724	Advanced topics on 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-VII**  
**Choice Based Credit System (CBCS) Structure for B. Tech.**  
**Honors in Energy Engineering**  
**w.e.f. Academic Year 2023-2024**

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

Laboratory/Tutorial Courses											
Course Code	Name of Laboratory/Tutorial Course	Hrs./week				Credits	Examination Scheme				
		L	T	P	D		ISE	ESE		ICA	Total
								POE	OE		
Hn734	Energy Resources, Economics and Environment		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-VII**  
**Choice Based Credit System (CBCS) Structure for B. Tech.**  
**Honors in Electric Vehicles Engineering**  
**w.e.f. Academic Year 2023-2024**

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

Laboratory/Tutorial Courses											
Course Code	Name of Laboratory/Tutorial Course	Hrs./week				Credits	Examination Scheme				
		L	T	P	D		ISE	ESE		ICA	Total
								POE	OE		
Hn744	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.