



## Pump Installation and Maintenance Timed Syllabus

Section	Topic	Questions	Word Count	Minutes
<b>Basic Pumping Concepts</b>				
1	Force and Work	1	420	4.5
2	Power and Horsepower	2	405	5.4
3	Energy	1	316	3.6
4	Velocity and Acceleration	1	551	5.6
5	Static Suction Lift	1	448	4.7
6	Pressure Losses: Friction and Vapor Pressure	1	332	3.8
7	Available and Required Net Positive Suction Head (NPSH)	2	375	5.1
8	Checking Pump Capacity and Pumping Hot Water	1	441	4.7
9	Computing Pump Power Requirements and Effects of Operational Factors	2	504	6.2
10	Priming a Pump	1	406	4.4
<b>Maintaining Packing and Seals</b>				
11	Uses and Types of Packing and Seals	1	232	2.9
12	Packing	1	621	6.2
13	Selecting Packing Material	1	235	3.0
14	Removing Old Packing	1	311	3.6
15	Installing New Packing	1	770	7.4
16	Testing New Packing and Packing Precautions	1	416	4.5
17	Mechanical Seals	2	290	4.4
18	Mechanical Seals versus Packing	1	203	2.7
19	Types of Mechanical Seals	1	624	6.2
20	Installing Mechanical Seals	1	519	5.3
21	Maintaining and Troubleshooting Packing and Seals	2	483	6.0
<b>Maintaining Centrifugal Pumps</b>				
22	Installing the Pump and Preparing the Foundation	1	316	3.6
23	Fabricated Steel Baseplates	1	360	4.0
24	Checking Shaft Alignment and Grouting the Baseplate	1	300	3.5
25	Mounting Pump and Motor Separately	1	350	3.9
26	Compensating for Heat and Installing Auxiliary Pump Drives	1	326	3.7
27	Maintaining Centrifugal Pumps	1	143	2.2
28	Inspecting Packing, Seals, and Bearings	1	224	2.9
29	Motor and Drive	1	111	1.9
30	Avoiding Common Pump Problems	1	97	1.8
31	Cavitation	1	265	3.2
32	Ring Seizure	1	238	3.0
33	Overheating	1	88	1.7
34	Pump Operation	1	391	4.3
35	Scheduling Maintenance and Troubleshooting	1	357	4.0
<b>Overhauling Centifugal Pumps</b>				
36	Preparation, Work Areas, and Rigging	1	384	4.2



37	Moving a Pump	1	203	2.7
38	Disassembling a Pump	3	882	10.4
39	Inspecting Pump Parts	2	770	8.4
40	Checking Clearances	1	144	2.2
41	Reassembling a Pump	2	668	7.6
42	Reinstalling a Pump	1	154	2.3
<b>Maintaining Rotary Pumps</b>				
43	Types of Rotary Pumps	1	148	2.2
44	Gear-Type and Vane-Type Rotary Pumps	1	691	6.8
45	Axial-Flow Pumps	1	139	2.2
46	Installing Rotary Pumps	1	297	3.5
47	Aligning Pump and Piping	1	211	2.8
48	Direction of Rotation	1	143	2.2
49	Pump Start-Up	1	256	3.1
50	Maintaining Rotary Pumps	2	764	8.4
51	Scheduling Inspections and Maintenance	1	101	1.8
52	Troubleshooting Rotary Pumps	2	676	7.6
	<b>Totals:</b>	<b>63</b>	<b>19099</b>	<b>222.2</b>
	<b>Time Required to Complete Course:</b>			<b>210.0</b>