

I. EDUCATION (0231) AND II. EDUCATION (0232) COURSE CURRICULUM (2018-2019 ACADEMIC YEAR)

PREP CLASS

Prep Class 1st Semester						Prep Class 2nd Semester					
Code	Course Name	LT	LB	CR	ECTS	Code	Course Name	LT	LB	CR	ECTS
REN000	Prep Class	0	0	0	0	REN00B	Prep Class	0	0	0	0

I.CLASS

1st. Semester Courses						2nd. Semester Courses					
Code	Course Name	LT	LB	CR	ECTS	Code	Course Name	LT	LB	CR	ECTS
PHY195	General Physics I	3	2	4	5	PHY196	General Physics II	3	2	4	5
FOL183	Foreign Language I	2	0	2	2	FOL184	Foreign Language II	2	0	2	2
CHE189	General Chemistry	3	2	4	4	CAL182	Mathematics II	4	0	4	5
CAL181	Mathematics I	4	0	4	5	CAL194	Linear Algebra	3	0	3	4
REN101	Introduction to Railway Systems Engineering	2	0	2	4	MEE104	Computer Aided Technical Drawing	2	2	3	4
CEC101	Information Technologies and Applications	1	2	2	3	MEE102	Statics	4	0	4	4
CEC105	Technical Drawing	2	2	3	5	CEC102	Computer Programming	1	2	2	4
TRK181	Turkish Language I	2	0	2	2	TRK182	Turkish Language II	2	0	2	2
<b>Total</b>		<b>19</b>	<b>8</b>	<b>23</b>	<b>30</b>	<b>Total</b>		<b>21</b>	<b>6</b>	<b>24</b>	<b>30</b>

II.CLASS

3rd. Semester Courses						4th. Semester Courses					
Code	Course Name	LT	LB	CR	ECTS	Code	Course Name	LT	LB	CR	ECTS
HST181	Atatürk's Principles and History of Revolutions I	2	0	2	2	HST182	Atatürk's Principles and History of Revolutions II	2	0	2	2
CAL289	Differential Equations	4	0	4	4	FOL282	Technical Foreign Language II	2	0	2	2
FOL281	Technical Foreign Language I	2	0	2	2	MEE204	Strength of Materials II	3	0	3	5
MEE203	Strength of Materials I	3	0	3	4	MEE210	Basics of Electricity and Electronics	2	0	2	4
MEE205	Materials Science	3	1	3	4	MEE212	Measurement Techniques	2	1	2	4
MEE209	Dynamics	4	0	4	5	REN202	Thermodynamics	4	0	4	4
REN201	Manufacturing Processes	3	1	3	4	REN204	Rail Vehicle Dynamics	3	0	3	4
REN203	Rail System Construction	3	0	3	5	REN206	Electromechanical Energy Conversion	2	0	2	5
<b>Total</b>		<b>24</b>	<b>2</b>	<b>24</b>	<b>30</b>	<b>Total</b>		<b>20</b>	<b>1</b>	<b>20</b>	<b>30</b>

III.CLASS

5th. Semester Courses						6th. Semester Courses					
Code	Course Name	LT	LB	CR	ECTS	Code	Course Name	LT	LB	CR	ECTS
CEC303	Engineering Economics	2	0	2	3	CEC306	Occupational Health and Safety II	2	0	2	2
CEC305	Occupational Health and Safety I	2	0	2	2	MEE302	Fluid Mechanics II	3	0	3	3
CEC307	Probability and Statistics	2	0	2	2	MEE308	Dynamics of Machinery	3	0	3	3
MEE301	Fluid Mechanics I	3	0	3	3	MEE348	Machine Elements II	3	0	3	3
MEE305	Heat Transfer	4	0	4	4	REN316	Rail Vehicle Mechanics	3	0	3	3
MEE307	Mechanisms	3	0	3	3	MEE338	Numerical Analysis	2	0	2	2
MEE303	Machine Elements I	3	0	3	3		<b>Technical Elective Course</b>	3	0	3	4
REN399	Industrial Practice I	0	0	0	4		<b>Technical Elective Course</b>	3	0	3	4
							<b>Technical Elective Course</b>	3	0	3	4
	<b>Technical Elective Course</b>	3	0	3	4		<b>Social Elective</b>	2	0	2	2
	<b>Social Elective</b>	2	0	2	2		<b>Total</b>	<b>27</b>	<b>0</b>	<b>27</b>	<b>30</b>
<b>Total</b>		<b>24</b>	<b>0</b>	<b>24</b>	<b>30</b>	<b>Total</b>		<b>27</b>	<b>0</b>	<b>27</b>	<b>30</b>

Technical Elective Courses					
REN315	Engines and Power Trains	3	0	3	4
REN317	RAMS in Rail Systems	3	0	3	4
REN319	Rail Systems Superstructure	3	0	3	4
MEE327	Computer Aided Design	3	0	3	4

Technical Elective Courses					
REN318	Bogie Systems and Vibration	3	0	3	4
REN320	Testing and Certification in Rail Systems	3	0	3	4
REN322	Operations and Traffic Management in Railways	3	0	3	4
REN324	Track Construction and Maintenance Machines	3	0	3	4
REN326	System Dynamics and Control	3	0	3	4
MEE330	Introduction to Finite Element Method	3	0	3	4
MEE342	Hydraulics and Pneumatics	3	0	3	4

Social Elective Courses					
ESC301	Labour Law	2	0	2	2
ESC303	Patent and Industrial Design	2	0	2	2
ESC307	Communication Skills	2	0	2	2
ESC309	International Communication	2	0	2	2
ESC311	Critical and Analytical Thinking	2	0	2	2

Social Elective Courses					
ESC302	Research and Presentation Skills	2	0	2	2
ESC306	Management Systems	2	0	2	2
ESC310	Corporate Behavior	2	0	2	2
ESC312	Standardization	2	0	2	2
ESC316	Social Media	2	0	2	2
ESC318	Contemporary Topics	2	0	2	2

IV.CLASS

7th. Semester Courses						8th. Semester Courses					
Code	Course Name	LT	LB	CR	ECTS	Code	Course Name	LT	LB	CR	ECTS
REN497	Industrial Practice II	0	0	0	5	REN418	Graduation Project	0	2	1	5

REN490	Workplace Training and Practice <sup>(1)</sup>	5	15	12	25
REN423	Rail Systems Engineering Laboratory <sup>(2)</sup>	3	1	3	4
REN429	Rail Vehicle Design <sup>(2)</sup>	2	1	2	2
REN427	Signalling <sup>(2)</sup>	2	1	2	2
CEC401	Engineering Ethics <sup>(2)</sup>	2	0	2	2
	<b>Technical Elective Courses<sup>(3)</sup></b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>5</b>
	<b>Technical Elective Courses<sup>(3)</sup></b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>5</b>
	<b>Technical Elective Courses<sup>(3)</sup></b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>5</b>
	<b>Total (if the course affixed with <sup>(1)</sup> is taken)</b>	<b>5</b>	<b>15</b>	<b>12</b>	<b>30</b>
	<b>Total (if the courses affixed with <sup>(2)</sup> are taken)</b>	<b>18</b>	<b>3</b>	<b>18</b>	<b>30</b>

REN490	Workplace Training and Practice <sup>(1)</sup>	5	15	12	25
REN423	Rail Systems Engineering Laboratory <sup>(2)</sup>	3	1	3	4
REN429	Rail Vehicle Design <sup>(2)</sup>	2	1	2	2
REN427	Signalling <sup>(2)</sup>	2	1	2	2
CEC401	Engineering Ethics <sup>(2)</sup>	2	0	2	2
	<b>Technical Elective Courses<sup>(3)</sup></b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>5</b>
	<b>Technical Elective Courses<sup>(3)</sup></b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>5</b>
	<b>Technical Elective Courses<sup>(3)</sup></b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>5</b>
	<b>Technical Elective Courses<sup>(4)</sup></b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>5</b>
	<b>Technical Elective Courses<sup>(4)</sup></b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>5</b>
	<b>Total (if the course affixed with <sup>(1)</sup> is taken)</b>	<b>5</b>	<b>17</b>	<b>13</b>	<b>30</b>
	<b>Total (if the courses affixed with <sup>(2)</sup> and <sup>(3)</sup> are taken)</b>	<b>18</b>	<b>5</b>	<b>19</b>	<b>30</b>
	<b>Total (if the courses affixed with <sup>(3)</sup> and <sup>(4)</sup> are taken)</b>	<b>15</b>	<b>2</b>	<b>16</b>	<b>30</b>

Technical Elective Courses					
REN4001	High Speed Railways	3	0	3	5
REN4002	Urban Rail Transport Systems	3	0	3	5
REN4003	Track and Route Planning in Railways	3	0	3	5
REN4004	Accident Investigation	3	0	3	5
REN4005	Electrification Systems	3	0	3	5
REN4006	Maintenance in Rail Systems	3	0	3	5
REN4007	Aerodynamics in Rail Vehicles	3	0	3	5
REN4008	Truck Construction and Maintenance Machines	3	0	3	5
REN4009	Safety Management Systems	3	0	3	5
REN4010	Intelligent Transportation	3	0	3	5
REN4011	Programmable Control Systems (PLC)	3	0	3	5
REN4012	Geographical Information Systems	3	0	3	5
REN4013	Transportation Economy	3	0	3	5
REN4014	MATLAB Applications in Rail Systems	3	0	3	5
REN4015	Basics of HVAC	3	0	3	5
REN4016	Energy Management	3	0	3	5
REN4017	Manufacturing Processes II	3	0	3	5
MEE4002	Electric and Hybrid Vehicles	3	0	3	5
MEE4004	Heat Exchangers	3	0	3	5
MEE4005	Fuel Cell Fundamentals	3	0	3	5
MEE4011	Computer Aided Manufacturing	3	0	3	5
MEE4013	Materials Inspection Methods	3	0	3	5
MEE4016	Internal Combustion Engines	3	0	3	5
MEE4020	Applications of Finite Element Analysis	3	0	3	5
MEE4022	Quality Control in Manufacturing	3	0	3	5
MEE4024	Vehicle Dynamics and Control	3	0	3	5
MEE4040	Welding Technologies	3	0	3	5
MEE4046	Construction Techniques	3	0	3	5
MEE4047	Tribology	3	0	3	5
MEE4050	Mechanical Measurements and Metrology	3	0	3	5
MEE4053	Failure Analysis	3	0	3	5
MEE4055	Transport Techniques	3	0	3	5
MEE4059	Elevators and Escalators	3	0	3	5

\* Students who take the courses with <sup>(1)</sup> in 7<sup>th</sup> semester will not take the courses with <sup>(2)</sup> and <sup>(3)</sup> in the same semester. And the students who take the courses with <sup>(2)</sup> and <sup>(3)</sup> will not take the courses with <sup>(1)</sup>.

\* Students who take the courses with <sup>(1)</sup> in 7<sup>th</sup> semester have to take only the courses with <sup>(2)</sup> ve <sup>(3)</sup> in the 8<sup>th</sup> semester.

\* Students who take the courses with <sup>(2)</sup> and <sup>(3)</sup> in 7<sup>th</sup> semester have two choices for the 8<sup>th</sup> semester. They can take either the courses with <sup>(1)</sup> or with <sup>(3)</sup> and <sup>(4)</sup> in 8<sup>th</sup> semester.

\* Students who fail the courses with <sup>(1)</sup> in 8<sup>th</sup> semester can take the 7<sup>th</sup> semester courses with <sup>(1)</sup> or the courses with <sup>(2)</sup> and <sup>(3)</sup> in following years.

\* Students who fail the courses with <sup>(1)</sup> in 7<sup>th</sup> semester can take the 7<sup>th</sup> semester courses with <sup>(1)</sup> or the courses with <sup>(2)</sup> and <sup>(3)</sup> in following years.

Note-1: Courses with <sup>(3)</sup> and <sup>(4)</sup> refer to the "Technical Elective Courses" that the students have to take in 4<sup>th</sup> grade.

Note-2: All students have to take "REN497-Industrial Practice II" in 7<sup>th</sup> semester and "REN418-Graduation Project" in 8<sup>th</sup> semester.

Note-3: Students must be successful in "CEC305-Occupational Health and Safety I" and "CEC306-Occupational Health and Safety II" in order to take "REN490-Workplace Training", "REN492-Workplace Application" and "REN423-Rail Systems Engineering Laboratory".