Training Curriculum in Basic Chemistry

Subject Field	
SF 1	Combining Materials
SF 2	Separation of Chemical Mixtures
SF 3	Investigation of Chemical Structures and Properties
SF 4	Photometric and Chromatographic Analysis
SF 5	Conducting Preparative Studies
SF 6	Synthesis of Several Chemical Groups

The approximately calculated course hours

The suggested education program for the first year of Basic Education is presented in the following.

The total course hours of the subject fields (SF) have been given at the top of each page and one course hour corresponds to 45 minutes.

The SF can be handled simultaneously as well as each after each other; however, teacher have to use the SF variously as needed.

For the impartation of mathematical knowledge all apprentices have to participate and pass through the online learning platform matheplus.

Subject Field/Description: SF 1 and SF 3

Fundamentals of Chemicals and Investigation of Chemical Structures and Properties

Total Course Period: 80 course hours (SF1 – 40 course hours, SF3 – 40 course hours)

Keyword/Content
Introduction to Chemistry
Basic Descriptions
General Descriptions
The order of Periodic Table
Atom Models
Chemical Bonding
Intermolecular Forces
Introduction to Acid, Base and Salts
Methods of Synthesis

Subject Field/Description: SF 1

Total Course Period: 40 course hours

Keyword/Content
Basic Units
Density
Calculation of Density
Calculation of Content
Substance Amount
Empirical Formula
Amount of content

Subject Field/Description: SF 2 **Separation of Chemical Mixtures**

Total Course Period: 40 course hours

Keyword/Content
Physical States
Chemical Mixtures
Separation of Mixtures
Mechanical Separation Methods
Thermal Separation Methods

Subject Field/Description: SF 2

Total Course Period: 40 course hours

Keyword/Content
Reaction equations
Redox reactions
Gas Laws
Calculation of mixtures
Calculation of conversions
Rate of yields

Subject Field/Description: SF 4 Photometric and Chromatographic Investigations

Total Course Period: 40 course hours

Keyword/Content
Basics of Chromatography
Separation Methods
Mobile Phase
Stationary Phase
Introduction to Chromatographic Methods
Application of Thin Layer Chromatography
Introduction to Photometry
Physical Basics
Components of Photometry and Its Structure
Analysis

Subject Field/Description: SF 5 **Preparative Studies and Kinetics**

Total Course Period: 80 course hours

Keyword/Content
Progress of Chemical Reactions
Influencing Parameters
Laboratory Experiments
Experiment evaluation
Reaction Rates
Dynamic Equilibrium
Laboratory Experiments
Evaluation of Experiments
Basic of Organics
Application of Mass Action Law
Commercial Equilibrium Reactions

Subject Field/Description: SF 6.a/1 **The Chemical Groups**

Total Course Period: 33 course hours

Keyword/Content
Introduction to Organic Chemistry
Bonds
Alkanes
Haloalkanes
Alkenes
Alkynes

Subject Field/Description: SF 6.a/2

Total Course Period: 34 course hours

Keyword/Content
Alcohols
Carbonyl Compounds
Ether
Carboxylic Acids
Optical Activity
N-bonds

Subject Field/Description: SF 6.b

Total Course Period: 33 course hours

Keyword/Content
Aromatics