

*** Pharmaceutical Chemistry** (*Dated September 30th, 2015*)

Total credits of the curriculum: 140 credits

- **General education knowledge: 28 credits**

(Not including physical education, military defence education and soft skills)

- **Basic courses: 6 credits**

- **Fundamental courses: 28 credits**

- **Core courses: 40 credits**

+ *Required: 29 credits*

+ *Elective: 11/30 credits*

- **Advanced courses: 38 credits**

+ *Required: 21 credits*

+ *Elective: 10/42 credits*

+ *Undergraduate thesis: 7 credits*

Available curriculum

| No. | Code | Subject | Credits | Credit hours | | | Prerequisite |
|------------|---------|---|-----------|--------------|----------|------------|--------------|
| | | | | Lecture | Practice | Self-study | |
| I | | General education knowledge <i>(Not including subjects 10-12)</i> | 28 | | | | |
| 1 | PHI1004 | <i>Fundamental Principles of Marxism - Leninism 1</i> | 2 | 24 | 6 | | |
| 2 | PHI1005 | <i>Fundamental Principles of Marxism - Leninism 2</i> | 3 | 36 | 9 | | PHI1004 |
| 3 | POL1001 | <i>Ho Chi Minh Ideology</i> | 2 | 20 | 10 | | PHI1005 |
| 4 | HIS1002 | <i>The Revolutionary line of the Communist Party of Vietnam</i> | 3 | 42 | 3 | | POL1001 |
| 5 | INT1003 | <i>Introduction to Informatic 1</i> | 2 | 10 | 20 | | |
| 6 | INT1005 | <i>Introduction to Informatic 3</i> | 2 | 12 | 18 | | INT1003 |
| 7 | FLF2101 | <i>General English 1</i> | 4 | 16 | 40 | 4 | |
| 8 | FLF2102 | <i>General English 2</i> | 5 | 20 | 50 | 5 | FLF2101 |
| 9 | FLF2103 | <i>General English 3</i> | 5 | 20 | 50 | 5 | FLF2102 |
| 10 | | <i>Physical Education</i> | 4 | | | | |
| 11 | | <i>National Defence Education</i> | 8 | | | | |
| 12 | | <i>Soft skills</i> | 3 | | | | |
| II | | Basic courses | 6 | | | | |
| 13 | HIS1056 | <i>Fundamentals of Vietnamese Culture</i> | 3 | 42 | 3 | | |
| 14 | GEO1050 | <i>Earth and Life Sciences</i> | 3 | 30 | 10 | 5 | |
| III | | Fundamental courses | 28 | | | | |
| 15 | MAT1090 | <i>Linear Algebra</i> | 3 | 30 | 15 | | |
| 16 | MAT1091 | <i>Calculus 1</i> | 3 | 30 | 15 | | |
| 17 | MAT1092 | <i>Calculus 2</i> | 3 | 30 | 15 | | MAT1091 |
| 18 | MAT1101 | <i>Probability and Statistics</i> | 3 | 27 | 18 | | MAT1091 |
| 19 | PHY1100 | <i>Mechanics - Thermodynamics</i> | 3 | 30 | 15 | | MAT1091 |
| 20 | PHY1103 | <i>Electromagnetism - Optics</i> | 3 | 30 | 15 | | MAT1091 |
| 21 | PHY1104 | <i>General Physics Practice</i> | 2 | | 30 | | PHY1100 |

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|-------------|---------|---|--------------|--------------|----------|------------|--------------|
| | | | | Lecture | Practice | Self-study | |
| | | | | | | | PHY1103 |
| 22 | CHE1051 | <i>Accelerated chemistry 1</i> | 3 | 42 | | 3 | |
| 23 | CHE1052 | <i>Accelerated chemistry 2</i> | 3 | 42 | | 3 | |
| 24 | CHE1046 | <i>Accelerated chemistry Lab</i> | 2 | | 30 | | CHE1052 |
| IV | | Core courses | 40 | | | | |
| IV.1 | | Required | 29 | | | | |
| 25 | CHE1077 | <i>Inorganic chemistry 1</i> | 3 | 40 | | 5 | CHE1052 |
| 26 | CHE1054 | <i>Inorganic chemistry Lab1</i> | 2 | | 30 | | CHE1052 |
| 27 | CHE1055 | <i>Organic chemistry 1</i> | 4 | 56 | | 4 | CHE1052 |
| 28 | CHE1191 | <i>Organic chemistry Lab 1</i> | 2 | | 30 | | CHE1052 |
| 29 | CHE2114 | <i>Organic chemistry 2</i> | 3 | 42 | | 3 | CHE1052 |
| 30 | CHE1082 | <i>Quantitative analysis</i> | 3 | 42 | | 3 | CHE1052 |
| 31 | CHE1058 | <i>Quantitative analysis Lab</i> | 2 | | 30 | | CHE1052 |
| 32 | CHE1083 | <i>Physical chemistry 1</i> | 3 | 42 | | 3 | CHE1051 |
| 33 | CHE1085 | <i>Physical chemistry Lab 1</i> | 2 | | 30 | | CHE1052 |
| 34 | CHE1084 | <i>Physical chemistry 2</i> | 5 | 70 | | 5 | CHE1052 |
| IV.2 | | Elective | 11/30 | | | | |
| 35 | CHE2005 | <i>Organic chemistry Lab 2</i> | 2 | | 30 | | CHE1052 |
| 36 | CHE2016 | <i>Organic chemistry Lab 3</i> | 2 | | 30 | | CHE1052 |
| 37 | CHE2008 | <i>Physical chemistry Lab 2</i> | 2 | | 30 | | CHE1052 |
| 38 | CHE2017 | <i>Physical chemistry Lab 3</i> | 2 | | 30 | | CHE1052 |
| 39 | CHE1086 | <i>Instrumental characterization</i> | 3 | 42 | | 3 | CHE1052 |
| 40 | CHE1087 | <i>Instrumental characterization Lab</i> | 2 | | 30 | | CHE1052 |
| 41 | CHE1078 | <i>Physical and physicochemical methods of chemical systems</i> | 3 | 42 | | 3 | CHE1052 |
| 42 | CHE1089 | <i>Physical and physicochemical methods of chemical systems Lab</i> | 2 | | 30 | | CHE1052 |
| 43 | CHE1067 | <i>Chemistry of polymers</i> | 2 | 28 | | 2 | CHE1052 |
| 44 | CHE1048 | <i>Colloid chemistry</i> | 2 | 28 | | 2 | CHE1052 |

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|------------|---------|---|--------------|--------------|----------|------------|--------------------|
| | | | | Lecture | Practice | Self-study | |
| 45 | CHE1088 | <i>Modern analysis</i> | 3 | 42 | | 3 | CHE1052 |
| 46 | CHE1091 | <i>Chemical engineering</i> | 3 | 42 | | 3 | CHE1052 |
| 47 | CHE1062 | <i>Chemical engineering Lab</i> | 2 | | 30 | | CHE1052 |
| V | | Advanced courses | 38 | | | | |
| V.1 | | Required | 21 | | | | |
| 48 | CHE2058 | <i>Medicinal chemistry</i> | 3 | 42 | | 3 | CHE2114 |
| 49 | CHE2059 | <i>Chemistry of medicinal plant</i> | 3 | 42 | | 3 | CHE2114 |
| 50 | CHE2060 | <i>Organic chemistry in drug synthesis</i> | 3 | 42 | | 3 | CHE2114 |
| 51 | CHE2061 | <i>Practical in medicinal chemistry</i> | 2 | | 30 | | CHE2058 CHE2059 |
| 52 | CHE1075 | <i>Fundamental of biochemistry</i> | 3 | 42 | | 3 | CHE1055 |
| 53 | CHE2014 | <i>Pharmacomodulation</i> | 3 | 42 | | 3 | CHE2059 |
| 54 | CHE2009 | <i>Scientific research report</i> | 2 | | 30 | | CHE2058 CHE2059 |
| 55 | CHE2010 | <i>Industrial practice</i> | 2 | | 30 | | CHE2058 CHE2059 |
| V.2 | | Elective | 10/42 | | | | |
| 56 | CHE3180 | <i>Methods in medicinal plant research</i> | 2 | 27 | | 3 | CHE2059 |
| 57 | CHE3181 | <i>Asymmetric synthesis</i> | 2 | 27 | | 3 | CHE2058 |
| 58 | CHE3182 | <i>Indicator in medicine test</i> | 2 | 27 | | 3 | CHE2058 |
| 59 | CHE2015 | <i>Drug industry</i> | 3 | 42 | | 3 | CHE2058 CHE2059 |
| 60 | CHE2071 | <i>Microbiology</i> | 3 | 42 | | 3 | CHE2058 CHE2059 |
| 61 | CHE3142 | <i>Chemistry of natural product</i> | 3 | 42 | | 3 | CHE2059 |
| 62 | CHE3184 | <i>Biological activity screening and evaluation of medicinal plants</i> | 2 | 27 | | 3 | CHE2059 |
| 63 | CHE3162 | <i>Antibiotics and immunology</i> | 3 | 42 | | 3 | CHE2058 |

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|------------|---------|---|----------|--------------|----------|------------|--------------------|
| | | | | Lecture | Practice | Self-study | |
| 64 | CHE3185 | <i>Functional Food</i> | 2 | 27 | | 3 | CHE2059 |
| 65 | CHE3186 | <i>Traditional medicine</i> | 2 | 27 | | 3 | CHE2058 CHE2059 |
| 66 | CHE3174 | <i>Semi-synthesis of drugs</i> | 3 | 42 | | 3 | CHE2059 |
| 67 | CHE3175 | <i>Synthesis of antibiotic, anti-HIV and anti-cancer drug</i> | 3 | 42 | | 3 | CHE2058 |
| 68 | CHE3165 | <i>Synthesis of excipient</i> | 3 | 42 | | 3 | CHE2058 CHE2059 |
| 69 | CHE2072 | <i>Enzyme and protein in drug synthesis</i> | 3 | 42 | | 3 | CHE2058 CHE2059 |
| 70 | CHE3170 | <i>Structural determination of bioactive compound</i> | 3 | 42 | | 3 | CHE2058 CHE2059 |
| 71 | CHE3171 | <i>Drug quantitation and pharmaceutical standards</i> | 3 | 42 | | 3 | CHE2058 CHE2059 |
| V.3 | | <i>Undergraduate thesis/ Subjects replacing thesis</i> | 7 | | | | |
| 72 | CHE4052 | <i>Undergraduate thesis</i> | 7 | | | | |
| | | <i>Subjects replacing thesis</i> | 7 | | | | |
| 73 | CHE3183 | <i>Law in medicine</i> | 2 | 27 | | 3 | CHE2058 CHE2059 |
| 74 | CHE3177 | <i>Computer-Aided Drug Design</i> | 3 | 42 | | 3 | CHE2058 |
| 75 | CHE2069 | <i>Apothecary techniques</i> | 2 | 28 | | 2 | CHE2058 CHE2059 |

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|------------|-------------|----------------|----------------|---------------------|-----------------|-------------------|---------------------|
| | | | | <i>Lecture</i> | <i>Practice</i> | <i>Self-study</i> | |
| | | Total | 140 | | | | |