SYLLABUS

1. Information about the program

1.1 Higher education institution	Politehnica University Timisoara
1.2 Faculty[1]/ Department [2]	Chemical Engineering, Biotechnologies and Environmental Protection / CAICON
1.3 Field of study (name/code[3])	Chemical Engineering / 10.30.50
1.4 Study cycle	License
1.5 Study program (name/code/qualification)	Chemical Engineering / 10.30.50.60 / engineer

2. Information about the discipline

2.1 Name of discipline/ formative category[4]			Organic chemical technology (Technological Project 2)/ DS				
2.2 Coordinator (holder) of course activities			S.L.dr.ing. Sabina NIȚU				
2.3 Coordinator (holder) of applied activities[5]			S.L.dr.ing. Sabina NIȚU				
2.4 Year of study[6]	IV	**2.5** Semester	7	**2.6** Type of evaluation	P-E	**2.7** Regime of discipline[7]	DI

3. Total estimated time – hours / semester: direct teaching activities (fully assisted or partly assisted) and individual training activities (unassisted) [8]

3.1 Number of fully assisted hours / week	1.5 of which:	**3.2** course	0	**3.3** seminar / laboratory / project	0/0/ 1.5
3.1* Total number of fully assisted hours / semester	21 of which:	**3.2*** course	0	**3.3*** seminar / laboratory / project	0/0/ 21
3.4 Number of hours partially assisted / week	of which:	**3.5** training		**3.6** hours for diploma project elaboration	
3.4* Total number of hours partially assisted / semester	of which:	**3.5*** training		**3.6*** hours for diploma project elaboration	
3.7 Number of hours of unassisted activities / week	2.07 of which:	additional documentary hours in the library, on the specialized electronic platforms and on the field			
		hours of individual study after manual, course support, bibliography and notes			
		training seminars / laboratories, homework and papers, portfolios and essays			
3.7* Number of hours of unassisted activities / semester	29 of which:	additional documentary hours in the library, on the specialized electronic platforms and on the field			
		hours of individual study after manual, course support, bibliography and notes			
		training seminars / laboratories, homework and papers, portfolios and essays			
3.8 Total hours / week [9]	3.57				
3.8* Total hours /semester	50				
3.9 Number of credits	2				

4. **Prerequisites** (where applicable)

4.1 Curriculum	• Concepts of chemical thermodynamic, organic chemistry, mass transfer and heat transfer

[1] The name of the faculty which manages the educational curriculum to which the discipline belongs
[2] The name of the department entrusted with the discipline, and to which the course coordinator/holder belongs.
[3] The code provided in HG - on the approval of the Nomenclature of fields and specializations / study programs, annually updated.
[4] Discipline falls under the educational curriculum in one of the following formative disciplines: Basic Discipline (DF), Domain Discipline (DD), Specialist Discipline (DS) or Complementary Discipline (DC).
[5] Application activities refer to: seminar (S) / laboratory (L) / project (P) / practice/training (Pr).
[6] Year of studies in which the discipline is provided in the curriculum.
[7] Discipline may have one of the following regimes: imposed discipline (DI) or compulsory discipline (DOb)-for the other fundamental fields of studies offered by UPT, optional discipline (DO) or optional discipline (Df).
[8] The number of hours in the headings 3.1 *, 3.2 *, ..., 3.8 * is obtained by multiplying by 14 (weeks) the number of hours in headings 3.1, 3.2, ..., 3.8. The information in sections 3.1, 3.4 and 3.7 is the verification keys used by ARACIS as: (3.1) + (3.4) ≥ 28 hours / wk. and (3.8) ≤ 40 hours / wk.
[9] The total number of hours / week is obtained by summing up the number of hours in points 3.1, 3.4 and 3.7.

4.2 Competencies	•

5. Conditions (where applicable)

5.1 of the course	•
5.2 to conduct practical activities	•

6. Specific competencies acquired through this discipline

Specific competencies	• Operation of chemical processes and installations with the application of chemical engineering knowledge • Description, analysis and use of the notions of structure and reactivity in the synthesys of organic compounds • Calculation of the raw material requirements, material and thermal and cooling agents, as well as the dimensioning of chemical equipment •
Professional competencies ascribed to the specific competencies	• - Analyse production processes for improvement; • - Manage chemical testing procedures; • - Test materials; • - Write technical reports • -Performs chemical experiments • -Approve engineering design • -Assess environmental impact
Transversal competencies ascribed to the specific competencies	• - Conduct quality control; • - Apply scientific, technological and engineering knowledge; • - Uses equipment, instruments or technological equipment accurately.

7. Objectives of the discipline (based on the grid of specific competencies acquired - pct.6)

7.1 The general objective of the discipline	• The general objective of the discipline is the knowledge of the main chemical and technological aspects related to industrial chemical processes, the calculation of the material balance and the heat balance
7.2 Specific objectives	• Knowledge of chemical technological execution processes, chemistry, thermodynamics, mechanism, kinetics and technological implications as well as the possibilities of industrial realization with specific technological problems

8. Content [10]

8.1 Course	Number of hours	Teaching methods [11]

[10] It details all the didactic activities foreseen in the curriculum (lectures and seminar themes, the list of laboratory works, the content of the stages of project preparation, the theme of each practice stage). The titles of the laboratory work carried out on the stands shall be accompanied by the notation "(*)".
[11] Presentation of the teaching methods will include the use of new technologies (e-mail, personalized web page, electronic resources etc.).

Bibliography [12]		
8.2 Applied activities [13]	Number of hours	Teaching methods
Introductory notes, fundamental principles (conversions, yields, limiting reactant, excess reactant, feed ratio, explosion limits, calculation base for continuous/discontinuous processes Presentation of design themes	2	Presentation of information, interactive discussions and consultations for each student on their own topic
Presentation of documentation sources Literature study and information systematization - physical properties, chemical properties; physical-chemical analysis methods. Preparation of the technical data sheet of the product	2	
Obtaining methods with their comparative analysis and the choice of a working variant, with justification Establishing the phases of the technological process and yields per phase	2	
Preparation of the technological flow scheme. Preparation of the operations time schedule (work time schedule	2	
Material balance calculation for chemical reactions, physical operations (mixing, separations, neutralizations, distillations, recrystallizations, etc.). Ways of presenting the material balance (table; graphic)	6	
Technological scheme Description of the technological process automation Aspects related to environmental protection. Marketing elements	2	
Enthalpy, thermodynamic state function; calculation of standard reaction enthalpies, calculation of thermal effects of industrial physical and chemical processes; Calculation of specific frames by empirical methods	2	
Preparation of the heat balance for the chemical reactor or other main equipment. Presentation of the heat balance in tabular and graphic form	2	
Calculation of the heat transfer surface of the reactor and its verification by comparison with that of the reactor chosen for the technological dimensioning	1	
Bibliography [14] 1. Sabina-Violeta Niţu, “Procese tehnologice chimice - calcule şi lucrări practice”, Editura POLITEHNICA, Timișoara, 2016, ISBN: 978-606-350-081-7 2. S. Popa, Z. Stanoiev, “Principii si fundamente de proiectare a compușilor chimici organici finite” , Editura POLITEHNICA, Timișoara”, 2013, ISBN 978-606-554-715-5 3. D.M. Himmelblau, J.B. Riggs, Basic Principles and Calculations in Chemical Engineering, Prentice Hall, 2004		

9. Corroboration of the content of the discipline with the expectations of the main representatives of the epistemic community, professional associations and employers in the field afferent to the program

- The content of the discipline was developed through consultation with responsible factors from relevant companies

10. Evaluation

[12] At least one title must belong to the discipline team and at least one title should refer to a reference work for discipline, national and international circulation, existing in the UPT library.
[13] Types of application activities are those specified in footnote 5. If the discipline contains several types of applicative activities then they are sequentially in the lines of the table below. The type of activity will be in a distinct line as: "Seminar:", "Laboratory:", "Project:" and / or "Practice/training".
[14] At least one title must belong to the discipline team.

Type of activity	**10.1** Evaluation criteria [15]	**10.2** Evaluation methods	**10.3** Share of the final grade
10.4 Course			
10.5 Applied activities	**S:**		
	L:		
	P[16]**:** Preparation of a complete and correct literature study Realization of the material and thermal balances Understanding of technological concepts and issues	Correction of the technological project	1
	Pr:		
10.6 Minimum performance standard (minimum amount of knowledge necessary to pass the discipline and the way in which this knowledge is verified [17])			
• Preparation and appropriate drafting of the project with systematized literature data, respecting the required content and correct technological calculation			

Date of completion	**Course coordinator (signature)**	**Coordinator of applied activities (signature)** Ș.L.dr.ing. Sabina NIȚU
Head of Department (signature) S.L.dr.ing. Andra TĂMAȘ	**Date of approval in the Faculty Council** [18]	**Dean (signature)** Ș.L.dr.ing. Mircea Laurențiu DAN

[15] Syllabus must contain the procedure for assessing the discipline, specifying the criteria, methods and forms of assessment, as well as specifying the weightings assigned to them in the final grade. The evaluation criteria shall be formulated separately for each activity foreseen in the curriculum (course, seminar, laboratory, project). They will also refer to the forms of verification (homework, papers, etc.)

[16] In the case where the project is not a distinct discipline, this section also specifies how the outcome of the project evaluation makes the admission of the student conditional on the final assessment within the discipline.

[17] It will not explain how the promotion mark is awarded.

[18] The endorsement is preceded by the discussion of the board's view of the study program on the discipline record.