

# ADMINISTRATIVE AND FINANCIAL PRINCIPLES

## LEARNING OUTCOMES

### A. GENERAL LEARNING OBJECTIVE

At the end of the course, the student will be able of evaluate administrative and financial processes to make decisions in an organization through the formulation of financial, costs and administrative accounting.

### B. EDUCATIONAL CONTENTS

STUDENT OUTCOMES TO WHICH THE TRAINING SPACE CONTRIBUTES.

<b>Specific student outcomes</b>	<ol style="list-style-type: none"> <li>1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.</li> <li>2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.</li> </ol>
<b>Student outcomes of emphasis</b>	Does not apply

### PERFORMANCE INDICATORS, SKILLS AND SCIENTIFIC-PROFESSIONAL KNOWLEDGE

The professional performance indicators, knowledge and skills promoted by this formation space are:

Learning results that the student will achieve in this training space	
<b>Performance indicators</b>	The student... 1.3 Applies knowledge of different areas of engineering to solve complex engineering problems. 1.9 Identifies and performs calculations for the integration of renewable energy systems. 1.10 Identifies opportunities and applies strategies for energy savings in electromechanical systems. 2.2 Applies a methodology to weigh the technical, economic, environmental and social requirements that must be met by the design of a component, system or process. 2.5 Establishes the technical, economic and environmental specifications that a component, system or process must meet. 2.7 Identifies and selects the manufacturing processes necessary to build an electromechanical component or system. 2.9 Calculates the direct and indirect costs of a project. 2.10 Evaluates the net present value and the internal rate of return of a project. 2.11 Makes a quote to sell engineering services.
<b>Knowledge</b>	Application of the administrative process. Analysis and interpretation of company's financial statements. Costs Classification. Product or service costing. Process or work order costing. Use of tools for the company's operational planning. Budget preparation. Decision making. Evaluation of investment projects.

<b>Skills</b>	<p>Teamwork. Research. Report writing. Information analysis. Cost analysis. Presentations</p>
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### C. UASLP GRADUATE: PERFORMANCE INDICATORS AND TRANSVERSAL SKILLS

Graduate profile UASLP	Performance indicators and transversal skills promoted by this training space
<b>Professional autonomy for learning</b> (an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.)	<p>The student...</p> <p>7.1 Recognizes the importance of learning and using sources different of information to prepare projects and reports. 7.2 Seeks to constantly improve their knowledge related to their profession.</p>
<b>Collaborative work skills</b> (an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives)	<p>The student...</p> <p>5.1 Contributes positively and widely to the work team. 5.2 Assumes responsibilities as a team member. 5.3 Expresses his/her ideas and concerns without fear.</p>
<b>Communication skills in spanish and other languages</b> (an ability to communicate effectively with a range of audiences)	<p>The student...</p> <p>3.1 Has organized oral communication, being consistent with the central message and using appropriate body language to express one's ideas. 3.2 Has organized written communication, which is consistent with the central message, identified in the introduction, where the main points are linked to transitions and a conclusion. 3.6 Prepares technical reports where made judgments as products of the results of engineering solutions.</p>
<b>Scientific, professional, and/or social creative project development</b>	<p>This student outcomes in engineering is considered as specific professional, the performance indicators are already integrated within this training space.</p>
<b>Social responsibility and ethical reflection</b> (an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts)	<p>The student...</p> <p>4.1 Identifies the facts and work methods considering ethical principles. 4.3 Avoids putting personal interests before the matters entrusted, or colluding to exercise unfair competition. 4.4 Safeguards the interests of the institution or persons and makes good use of the resources allocated for the performance of their activities. 4.7 Demonstrates responsibility and awareness of the consequences of his/her activities for society in general. 4.8 Understands how economic factors affect professional practice. 4.9 Is aware of a variety of current events in a national and global context.</p>

## GENERAL STRUCTURE AND SUMMATIVE EVALUATION

### D. GENERAL DIDACTIC PLANNING

Throughout the course the student will learn to use tools that allow him/her to participate in the strategies planning, decision making, and administrative control of a company. In each topic the student must develop learning activities. These activities will be done in teams of 3 to 5 students.

Learning activities that are structured as projects must follow the following methodology:

1. Project overview.
2. Project definition.
3. Project justification.
4. Project development.
5. Results analysis
6. Conclusions.
7. References.

The teaching methodology is:

-By the teacher: Facilitate learning through the presentation of topics, perform calculation exercises during class, encourage group discussion of the topics covered and facilitate the learning through the creation of a company, which will contain practical examples of each topic.

-By the student: Conduct research, technical readings, develop a team project (3 to 5 members) and write the report.

The course is divided into 4 topics with a total of 80 hours of practice, consisting of five partial evaluations.

The training and learning structure proposed for the training space is shown below.

#	Name of the unit or training phase	Unit learning objective	Specific educative contents (performance indicators, skills, knowledge)
1.	Administrative process (16h).	At the end of the unit, the student will be able to apply the stages of the administrative process to structure a company.	<b>Specific educational content:</b> 1.1 Planning. 1.1.1 Mission. 1.1.2 Vision. 1.1.3 Objectives. 1.1.4 SWOT. 1.1.5 Values. 1.1.6 Strategies. 1.2 Organization. 1.2.1 Hierarchy. 1.2.2 Departmentalization. 1.2.3 Separation of functions. 1.2.4 Coordination. 1.2.5 Teamwork. 1.3 Direction. 1.3.1 Management skills 1.3.2 Leadership. 1.3.3 Motivation. 1.3.4 Communication.

			<p>1.3.5 Negotiation.</p> <p>1.4 Control.</p> <p>1.4.1 Preventive, corrective, concurrent</p> <p>1.4.2 Determination of standards.</p> <p>1.4.3 Comparison.</p> <p>1.4.4 Deviation analysis.</p> <p>1.4.5 Actions.</p> <p><b>Learning activities:</b> Written work to the structuring of a company with the following content:</p> <ol style="list-style-type: none"> <li>a) Introduction.</li> <li>b) Description of the company.</li> <li>c) Mission, vision, objectives, and values.</li> <li>d) Organizational chart, profiles, and job descriptions.</li> <li>e) Managerial skills development inside the company.</li> <li>f) Definition of performance measurement indicators.</li> <li>g) Preventive, concurrent, and corrective controls systems.</li> </ol> <p>Oral team presentation</p> <p><b>Performance indicators:</b> The student...</p> <p>3.1 Has organized oral communication, being consistent with the central message and using appropriate body language to express one's ideas.</p> <p>3.2 Has organized written communication, which must be consistent with the central message, identified in the introduction, where the main points are linked to transitions and a conclusion.</p> <p>3.6 Prepares technical reports where made judgments as products of the results of engineering solutions.</p> <p>4.1 Identifies the facts and work considering ethical principles.</p> <p>4.3 Avoids putting personal interests before the matters entrusted, or colluding to exercise unfair competition.</p> <p>4.4 Safeguards the interests of the institution or persons and makes good use of the resources allocated for the performance of their activities.</p> <p>4.7 Demonstrates responsibility and awareness of the consequences of his/her activities for society in general.</p> <p>4.8 Understands how economic factors affect professional practice.</p> <p>4.9 Is aware of a variety of current events in a national and global context.</p> <p>5.1 Contributes positively and widely to the work team.</p> <p>5.2 Assumes responsibilities as a team member.</p> <p>5.3 Expresses his/her ideas and concerns without fear.</p>
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			<p>7.1 Recognizes the importance of learning and using sources different of information to prepare projects and reports.</p> <p>7.2 Seeks to constantly improve their knowledge related to their profession.</p>
2.	Financial accounting (20 h).	At the end of the unit, the student will be able to structure a company's financial accounting through knowledge of the fundamentals bases of financial accounting.	<p><b>Specific educational content:</b></p> <p>2.1 Types of accounting</p> <p>2.2 Double entry</p> <p>2.3 Accounting process</p> <p>2.4 Assets liabilities and capital.</p> <p>2.5 Accounting accounts.</p> <p>2.6 Statements of income.</p> <p>2.7 Statements of financial position.</p> <p><b>Learning activities:</b></p> <p>Written work to the company's financial information.</p> <p>a) Accounting entries</p> <p>b) "T" accounts.</p> <p>Oral team presentation.</p> <p><b>Performance indicators:</b></p> <p>The student...</p> <p>3.1 Has organized oral communication, being consistent with the central message and using appropriate body language to express one's ideas.</p> <p>3.2 Has organized written communication, which must be consistent with the central message, identified in the introduction, where the main points are linked to transitions and a conclusion.</p> <p>3.6 Prepares technical reports where made judgments as products of the results of engineering solutions..</p> <p>4.1 Identifies the facts and work methods considering ethical principles.</p> <p>4.3 Avoids putting personal interests before the matters entrusted, or colluding to exercise unfair competition.</p> <p>4.4 Safeguards the interests of the institution or persons and makes good use of the resources allocated for the performance of their activities.</p> <p>4.7 Demonstrates responsibility and awareness of the consequences of his/her activities for society in general.</p> <p>4.8 Understand how economic factors affect professional practice.</p> <p>4.9 Is aware of a variety of current events in a national and global context.</p> <p>5.1 Contributes positively and widely to the work team.</p> <p>5.2 Assumes responsibilities as a team member.</p> <p>5.3 Expresses his/her ideas and concerns without fear.</p> <p>7.1 Recognizes the importance of learning and using sources different of information to prepare projects and reports.</p> <p>7.2 Seeks to constantly improve their knowledge related to their profession.</p>

<p>3.</p>	<p>Cost accounting (22 h).</p>	<p>At the end of the unit, the student will be able to evaluate product costs for inventory and sale.</p>	<p><b>Specific educational content:</b></p> <ul style="list-style-type: none"> <li>3.1 Cost classification <ul style="list-style-type: none"> <li>3.1.1 Variable and fixed costs.</li> <li>3.1.2 Direct and indirect costs.</li> <li>3.1.3 Product and period costs.</li> </ul> </li> <li>3.2 Elements of a product: materials labor and indirect manufacturing costs.</li> <li>3.3 Ways to cost production. <ul style="list-style-type: none"> <li>3.3.1 Actual costing.</li> <li>3.3.2 Normal costing.</li> <li>3.3.3 Standard costing</li> <li>3.3.4 Activity-based costing.</li> </ul> </li> <li>3.4 Valuation methods for materials. <ul style="list-style-type: none"> <li>3.4.1 FIFO</li> <li>3.4.2 LIFO</li> <li>3.4.3 Average cost (simple, weighted)</li> </ul> </li> <li>3.5 Labor cost. <ul style="list-style-type: none"> <li>3.5.1 Wages and salaries, incentives, social security contributions, benefits.</li> </ul> </li> <li>3.6 Indirect manufacturing costs. <ul style="list-style-type: none"> <li>3.6.1 Estimated indirect manufacturing costs.</li> <li>3.6.2 Determination of indirect manufacturing cost application rates.</li> <li>3.6.3 Methods of allocating costs from service departments to production departments. <ul style="list-style-type: none"> <li>3.6.3.1 Direct method</li> <li>3.6.3.2 Stepwise method</li> </ul> </li> </ul> </li> <li>3.7 Job order cost accumulation system</li> <li>3.8 Cost accumulation system by manufacturing process.</li> </ul> <p><b>Learning activities:</b></p> <p>Written work on financial analysis and costing</p> <ul style="list-style-type: none"> <li>a) Income statement</li> <li>b) Financial position statement</li> <li>c) Material costing.</li> <li>d) Labor costing.</li> </ul> <p>Oral team presentation.</p> <p><b>Performance indicators:</b></p> <p>The student...</p> <ul style="list-style-type: none"> <li>1.3 Applies knowledge of different areas of engineering to solve complex engineering problems.</li> <li>1.9 Identifies and performs calculations for the integration of renewable energy systems.</li> <li>1.10 Identifies opportunities and applies strategies for energy savings in electromechanical systems.</li> <li>2.5 Establishes the technical, economic and environmental specifications that a component, system or process must meet.</li> <li>2.9 Calculates the direct and indirect costs of a project.</li> <li>2.10 Evaluates the net present value and the internal rate of return of a project.</li> </ul>
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4	Administrative accounting (22 h).	At the end of the unit, the student will be able to develop budgets to evaluate investment projects.	<p><b>Specific educational content:</b></p> <p>4.1 Costing methods: Direct or variable and absorbing.</p> <p>4.2 Cost-volume-utility model</p> <p>    4.2.1 Breakeven point</p> <p>    4.2.2 Analysis of change in model variables.</p> <p>4.3 Master Budget.</p> <p>4.4 Decision making.</p> <p>    4.4.1 Marginal analysis.</p> <p>4.5 Evaluation of investment projects.</p> <p>    4.5.1 Methodology for the analysis and the evaluation of investment projects.</p> <p>    4.5.2 Definition of each of the investment projects.</p> <p>    4.5.3 Company's weighted average cost of capital.</p> <p>    4.5.4 Quantitative analysis.</p> <p>        4.5.4.1 Methods that do not consider money value in time: payback period, accounting pay of return.</p> <p>        4.5.4.2 Methods that consider the money value in time: net present value, annual equivalent value.</p> <p><b>Learning activities:</b></p> <p>Written work on cost analysis (fourth evaluation)</p>

			<ul style="list-style-type: none"> <li>a) Indirect manufacturing costs.</li> <li>b) Product or service costing.</li> <li>c) Sales price determination.</li> <li>d) Breakeven point calculation.</li> </ul> <p>Oral team presentation.</p> <p>Written work on project evaluation (fifth evaluation).</p> <ul style="list-style-type: none"> <li>a) Master Budget.</li> <li>b) Evaluation of an investment project.</li> <li>c) Conclusions.</li> </ul> <p>Oral team presentation.</p> <p><b>Performance indicators:</b></p> <p>The student...</p> <p>1.3 Applies knowledge of different areas of engineering to solve complex engineering problems.</p> <p>1.9 Identifies and performs calculations for the integration of renewable energy systems.</p> <p>1.10 Identifies opportunities and applies strategies for energy savings in electromechanical systems.</p> <p>2.2 Applies a methodology to weigh the technical, economic, environmental and social requirements that must be met by the design of a component, system or process.</p> <p>2.5 Establishes the technical, economic and environmental specifications that a component, system or process must meet.</p> <p>2.7 Identifies and selects the manufacturing processes necessary to build an electromechanical component or system.</p> <p>2.9 Calculates the direct and indirect costs of a project.</p> <p>2.10 Evaluates the net present value and the internal rate of return of a project.</p> <p>2.11 Makes a quote to sell engineering services</p> <p>3.1 Has organized oral communication, being consistent with the central message and using appropriate body language to express one's ideas.</p> <p>3.2 Has organized written communication, which must be consistent with the central message, identified in the introduction, where the main points are linked to transitions and a conclusion.</p> <p>3.6 Prepares technical reports where made judgments as products of the results of engineering solutions.</p> <p>4.1 Identifies the facts and work methods considering ethical principles.</p> <p>4.3 Avoids putting personal interests before the matters entrusted, or colluding to exercise unfair competition.</p> <p>4.4 Safeguards the interests of the institution or persons and makes good use of the resources allocated for the performance of their activities.</p> <p>4.7 Demonstrates responsibility and awareness of the consequences of his/her activities for society in general.</p> <p>4.8 Understands how economic factors affect professional practice.</p> <p>4.9 Is aware of a variety of current events in a national</p>
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### E. ASSESSMENT

Below is proposed the course summative assessment. According to it, students will receive an ordinary grade.

This subject reports five partial grades and one ordinary grade, the percentages and weighting are as presented in the following table, the learning activities are mandatory for all groups of the subject, the evaluation rubrics are provided by the teacher. The project includes the topics developed by the teacher in class and the result of the learning activities developed by the student.

Table 1.

#	Time of evaluation	Proposal for the summative assessment of learning	Evaluation percentage
1.	Evaluation of the first partial according to the faculty calendar.  At the end of unit 1	Written work (topics 1.1 to 1.4.5) 6 points Oral team presentation 4 points	20%
2.	Evaluation of the second partial in according to the faculty calendar.  At the end of unit 2.	Written work (topics 2.1 to 2.7) 6 points Oral team presentation 4 points	20%
3.	Evaluation of the third partial in according to the faculty calendar.  At the end of topic 3.5 of unit 3.	Written work (topics 3.1 to 3.5) 6 points Oral team presentation 4 points	20%
4.	Evaluation of the fourth partial in according to the faculty calendar.  At the end of topic 4.2 of unit 4.	Written work (topics 3.6 to 4.2) 6 points Oral team presentation in English 4 points	20%
5.	Evaluation of the fifth partial in according to the faculty calendar.  At the end of topic 4.5.4.2 of unit 4.	Written work (topics 4.3 to 4.5.4.2) 6 points Oral team presentation in English 4 points	20%

<b>Ordinary final assessment</b>	The ordinary grade will be the sum of the grade obtained in each evaluation moment multiplied by the evaluation percentage. The grade will be reported based on 10 and will proceed according to the Examination Regulations to
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	declare the subject accredited or if applicable EE or ET. The value of the evaluation is 100%.
<b>Extraordinary assessment</b>	Theoretical and practical written exam. 100% of the topics and the result of the learning activities of this formation space will be evaluated. The student must deliver the result of the learning activities. The value of the evaluation is 100%. It will take place on the dates authorized for such evaluation.
<b>Sufficiency assessment</b>	Theoretical and practical written exam. 100% of the topics and the result of the learning activities of this formation space will be evaluated. The student must deliver the result of the learning activities. The value of the evaluation is 100%. It will take place on the dates authorized for such evaluation.
<b>Regularization assessment</b>	Theoretical and practical written exam. 100% of the topics and the result of the learning activities of this formation space will be evaluated. The student must deliver the result of the learning activities. The value of the evaluation is 100%. It will take place on the dates authorized for such evaluation.

## F. BIBLIOGRAPHIC AND DIGITAL RESOURCES

### BASIC TEXTS:

1. Koontz Harold, Weihrich Heinz, Cannice Mark. Administración: una perspectiva global y empresarial McGraw-Hill, 2016
2. Certo, Samuel C. Administración moderna: diversidad, calidad, ética, y el entorno global. Prentice Hall, 2001.
3. Robbins, Stephen P. Fundamentos de administración: conceptos esenciales y aplicaciones. Pearson Educación, 2013.
4. Lara Flores, Elías. Primer curso de contabilidad. Trillas, 2008.
5. Torres Salinas, Aldo S. Contabilidad de costos: análisis para la toma de decisiones. McGraw-Hill, 2010.
6. Ramírez Padilla, David Noel. Contabilidad administrativa. McGraw-Hill, 2013
7. Baca Urbina, Gabriel, Evaluación de proyectos Octava edición McGraw-Hill, 2016.
8. Blank, Leland T. Ingeniería económica. McGraw-Hill, 2012.
9. Mejía Trejo, Juan. Teoría de la innovación organizacional, BUK 2019.
10. Mejía Trejo, Juan. Mercadotecnia e innovación en el desarrollo de nuevos productos y servicios - Teoría y Práctica. BUK 2018
11. Estupiñan, Rodrigo. Estados financieros básicos nic/niif (sil) ECOE 2017.

## CURRICULAR AND SCHOOL DATA

Area	Line	Type of credit	Type of formation space	Language of instruction	Method of delivery
Basic	N/A	Nuclear	Workshop	Spanish	In person

### CREDITS

According to the official curricular proposal, the school data of the formation space are:

Semester	Number of weeks	Classroom hours per week	Contact hours of practice per week	Hours of autonomous student work per week	Credits per agreement 17/11/17(before 279)
3	16	0	5	0	5

#### REQUIREMENTS TO ATTEND THE FORMATION SPACE

The school requirements for the formation space are noted below, if necessary

#	REQUIREMENTS
1.	None.

#### EQUIVALENCIES OF THE FORMATION SPACE

Next, the equivalences of the training space with spaces of previous educational programs are indicated, if necessary.

EQUIVALENCES
None

#### INTEROPERABILITY

This formation space is shared with other educational programs and/or academic entities: No.

ACADEMIC INSTITUTION AND EDUCATIONAL PROGRAMS
College of Engineering: Electromechanical Engineering.

#### OTHER FORMS OF ACCREDITATION

- This formation space can be accredited through the presentation of a document certifying that the student has already acquired the necessary learning: **No**.
- This formation space can be accredited through an exam that certifies that the student has already acquired the necessary learning: **No**.

#### FORMATION OPTIONS

This formation space is part of the following options:

Training option	Yes/ No
Bachelor's Degree	Yes
Dual formation program	No
Higher University Technician	No
Executive career	No
Partial accreditation option	No
Residency or internship	No

#### TEACHER PROFILE

The academic and professional background and experience that the profile of the teacher who imparts this formation space must meet, and that must be considered in the hiring and formation of the teacher, is:

**Formation and academic experience**

- Public Accountant, Electromechanical Engineer or Mechanical Engineer with experience in the subjects of the course or with a Master’s degree in finance or administration.
- Five years teaching subjects in the Mechanical-Electrical Area.

**Formation and professional and work experience**

- Must have professional or work experience in the areas of administration, accounting, finance and costing.

**The teacher’s role**

- Each topic should be presented in a lecture type class, giving the opportunity for participation and discussion to the students, for which the teacher should start the class by asking some of the students to comment on what has been studied regarding the corresponding topic. He/she will supervise group dynamics and will ask the students to carry out the learning activities indicated in the didactic planning.

**MAXIMUM AND MINIMUM NUMBER OF STUDENTS PER GROUP**

- Maximum number of students to guarantee academic, pedagogical, and financial viability: 25
- Minimum number of students to guarantee academic, pedagogical, and financial viability: 10

**TYPE OF PROPOSAL**

- It is a version of programs that are presented as a curricular adjustment of content within the framework of an existing educational program.

**DEVELOPERS AND REVIEWERS**

Developers of this programs	Reviewers of this programs
M.A. Vérulo Castro López	PhD. Baudel Lara Lara
M.A. Rocío Contreras Hernández	M.F. Verónica Hernández García.
M. Eng. Mariana Contreras Hernández	M.A. Citlalli Irachka Orea Rosas.
	M.A. Mónica Méndez Ontiveros.
	M.C. Vicente Hernández García.