

# INGLÉS TÉCNICO

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***Ingeniería Civil:** Acreditación de Conocimientos de Inglés Técnico*

***Ingeniería Industrial:** Inglés Técnico*

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***Licenciatura en Ciencias de la Computación:** Comunicación Técnica II*

***Adjunta :**Mgtr. Prof. Lilia A. Dieguez*

***JTP:** Prof. Mercedes Frassinelli*



## LA FRASE NOMINAL - PRE Y POST MODIFICACIÓN DEL NÚCLEO

|                                                   |         |                  |          |           |         |                        |                           |           |           |
|---------------------------------------------------|---------|------------------|----------|-----------|---------|------------------------|---------------------------|-----------|-----------|
|                                                   |         |                  |          |           | Charges |                        | are                       | positive. |           |
| The                                               |         |                  |          |           | Charge  |                        | is                        | positive. |           |
| A                                                 |         |                  |          |           | charge  |                        | is                        | positive. |           |
| Those                                             |         |                  |          |           | charges |                        | are                       | positive. |           |
| Its                                               |         |                  |          |           | charge  |                        | is                        | positive. |           |
| The device's                                      |         |                  |          |           | charge  |                        | is                        | positive. |           |
|                                                   | One     |                  |          |           | charge  |                        | is                        | positive. |           |
| The                                               | second  |                  |          |           | charge  |                        | is                        | positive. |           |
|                                                   | Both    |                  |          |           | charges |                        | are                       | positive. |           |
|                                                   | Each    |                  |          |           | charge  |                        | is                        | positive. |           |
|                                                   | Another |                  |          |           | charge  |                        | is                        | positive. |           |
|                                                   | Several |                  |          |           | charges |                        | are                       | positive. |           |
| The                                               |         | respective       |          |           | charges |                        | are                       | positive. |           |
| The                                               | two     | main             |          |           | charges |                        | are                       | positive. |           |
|                                                   |         |                  | Powerful |           | charges |                        | are                       | positive. |           |
|                                                   |         |                  | Electric |           |         | charges                |                           | are       | positive. |
| These                                             | two     | different        | electric |           |         | charges                |                           | are       | positive. |
| A                                                 |         | very important   | electric |           |         | charge                 |                           | is        | positive. |
| An                                                |         | extremely high   | electric |           |         | charge                 |                           | is        | positive. |
| A                                                 |         | well distributed | electric |           |         | charge                 |                           | is        | positive. |
| The                                               |         |                  |          | capacitor |         | charge                 |                           | is        | positive. |
| The                                               |         |                  |          | pole      |         | charge                 |                           | is        | positive. |
| The                                               |         |                  | existing |           |         | charge                 |                           | is        | positive. |
| The                                               |         |                  | electric |           |         | charge                 | in the capacitor          | is        | positive. |
| The                                               |         |                  |          |           |         | charge                 | to move the engine        | is        | positive. |
| The                                               |         |                  |          |           |         | charge                 | measured in the capacitor | is        | positive. |
| The                                               |         |                  | electric |           |         | charge                 | for the capacitor         | is        | positive. |
| The                                               |         |                  |          |           |         | charge                 | requiring supervision     | is        | positive. |
| The                                               |         |                  |          |           |         | charge                 | which we incorporated     | is        | positive. |
| The                                               |         |                  |          |           |         | charge                 | that the device requires  | is        | positive. |
| The                                               |         |                  |          |           |         | charging               | of the capacitor          | is        | crucial   |
|                                                   |         |                  |          |           |         | Charging the capacitor |                           | is        | crucial   |
|                                                   |         |                  |          |           |         | To charge              | the capacitor             | is        | crucial   |
| To charge the capacitor, follow the instructions. |         |                  |          |           |         |                        |                           |           |           |

| Premodificadores                                               |                         | Núcleo | Post modificadores | Verbo finito |          |
|----------------------------------------------------------------|-------------------------|--------|--------------------|--------------|----------|
| Determinantes                                                  | Adjetivos y otros       |        |                    |              |          |
| That                                                           | extremely high electric | charge | in the capacitor   | is           | positive |
| 1                                                              | 3                       | 2      | 4                  |              |          |
| Esa carga eléctrica extremadamente alta en el capacitor es.... |                         |        |                    |              |          |

## EL SUSTANTIVO, NÚCLEO DE LA FRASE NOMINAL

Es el elemento obligatorio en una frase nominal

Si no hay determinantes, el núcleo es el primer elemento que debe traducirse.

### Sustantivos

**Propios o comunes en singular o plural** (personas, lugares, cosas, entidades abstractas, etc.)

Cuando se trata de generalizaciones, se debe proporcionar el artículo castellano en la traducción: *el, la, los, las, lo*, dado que en inglés se generaliza sin artículo.

Para su búsqueda en el diccionario tener en cuenta lo siguiente:

|                                    |                                        |                  |
|------------------------------------|----------------------------------------|------------------|
| <b>Plural con –s</b>               | day – days;                            |                  |
| <b>Plural con –es</b>              | brush – brushes                        |                  |
|                                    | gas – gases                            |                  |
|                                    | box – boxes                            |                  |
| <b>Plural con –ies</b>             | country – countries                    |                  |
|                                    | theory – theories                      |                  |
| <b>Plural con –ves</b>             | half – halves                          |                  |
|                                    | knife – knives                         |                  |
|                                    | Leaf – leaves                          |                  |
| <b>Plurales irregulares</b>        | man – men                              |                  |
|                                    | woman – women                          |                  |
|                                    | foot – feet                            |                  |
| <b>Plurales latinos o griegos</b>  | medium – media                         |                  |
|                                    | stratum – strata                       |                  |
|                                    | datum – data                           |                  |
|                                    | phenomenon – phenomena                 |                  |
|                                    | criterion – criteria                   |                  |
|                                    | nucleus – nuclei                       |                  |
|                                    | thesis – theses                        |                  |
|                                    | analysis – analyses                    |                  |
| <b>Plural igual al singular</b>    | sheep – sheep                          |                  |
|                                    | Chinese – Chinese                      |                  |
| <b>Plural con –oes</b>             | hero – heroes                          | (photo – photos) |
|                                    | potato – potatoes                      | (radio – radios) |
| <b>Singulares terminados en –s</b> | news; Mathematics; Physics; Mechanics  |                  |
| <b>Plurales sin singular</b>       | pincers, pliers, tongs, stairs, means. |                  |

### Pronombres personales

**I** yo  
**You** tú, usted, ustedes.  
**He** el  
**She** ella  
**It** el, ella, ello,  
**We** nosotros  
**They** ellos

1. **E**
2. **Engineers** must work hard.
3. **Computers** have changed the world.
4. **They** are revolutionary.
5. **Oil** is a fuel
6. **Carbon** is an element. **It** is in nature.
7. **We** produce oil and gas
8. **He** designs software.

### **LOS PREMODIFICADORES DE LA FRASE NOMINAL**

1. **Determinantes:** Puede o no estar en la frase nominal

**Aparecen primero y se traducen primero en función del núcleo**



## Artículos:

**The:** el, la, los, las, lo

**A, an:** un, una

*Traducir **antes** que el núcleo*

7. There is a plant that produces gas and oil.
8. The plant is in Mendoza.
9. Computers are electronic and digital.
10. The machinery is called hardware.
11. The instructions and data are called software.
12. A central processing unit is the heart of a computer.

## Demostrativos:

**This:** este, esta, esto, éste, ésta.

**These:** estos, estas, éstos, éstas.

**That:** ese, esa, eso, aquel, aquella, aquello.

**Those:** esos, esas, aquellos, aquellas. *Traducir **antes** que el núcleo.*

13. This book is about Civil Engineering.
14. These services are provided by technicians.

## Posesivos: *Traducir **antes** que el núcleo*

**My** mi

**Your** tu

**His** su (de él)

**Her** su (de ella)

**Its** su (no de persona)

**Our** nuestro

**Their** su (de ellos)

## Posesivos: *Traducir **después** del núcleo*

**Smith's** de Smith (perteneciente a Smith)

**Smith and Simpson's** de/perteneciente a Smith y Simpson.

**Smith and Harris' /Harris's** de/perteneciente a Smith y Harris.

15. **My** design has new features.
16. **Our** intention is to transmit knowledge.
17. **His** book was published in 1985.
18. **Maxwell's** Equations are in chapter 8.
19. **Peter Norton's** book.
20. **PPG's** Coatings will be quoted.
21. **Jones'** presentation was too long.

*Traducir **antes** que el núcleo*

## Numerativos y cuantificadores indefinidos

**Some** algo (de) un poco de, algunos, algunas,

(**some + cantidad**= alrededor de)

**Any** cualquier, alguno, todo, ningún, algo  
**No** nada de, ningún  
**Every** todo, todos, cada, todos los  
**Each** cada (uno), todo(s) cada cual,  
**Many** muchos, numerosos  
**Several** varios/as, diversos/as  
**All** todos, completamente, la totalidad  
**Other** otro, otra, otros, otras  
**Another** otro/a, distinto/a  
**Much** mucho, la mayor parte de, la mayoría  
**Few** pocos / **a few** algunos  
**Little** poco / **a little** un poco  
**Either** cada  
**Both** ambos  
**Neither** ninguno

### Numerativos y cuantificadores definidos

**One, two**, etc: uno, dos, etc.

**One hundred**: cien, etc.

**Two thousand** dos mil, etc. **First, second, third**: primero, Segundo, tercero, **forth, fifth, sixth** ... cuarto, quinto, sexto

Traducir **antes** que el núcleo

23. A few instructions appear in this chapter.

#### Palabras que indican grados de fama, familiaridad, comparación

**Same**, el mismo, los mismos

**Different**, diferente, diferentes,

**Various**, distintos, variados

**Other**, otro, otros,

**Whole**, todo, la totalidad de

**Respective**, respectivo/s

**Possible**, posible, posibles

**Obvious**, obvio/s

**Complete**, todo

*Son adjetivos que en general se traducen **antes** que el núcleo, pero pueden ir **después** sin cambiar el significado.*

26. I am using the **same** devices.

27. The **possible** uses follow.

28. The **various** reasons are given. 29. The **other** problem is distance.

30. Computers have changed the **whole** world.

31. The **respective** alternatives are these ones.

32. The **other possible two** alternatives are these ones.

33. A **famous** book was mentioned.

34. The energy sector requires **new proposals**

## 2. Adjetivos, sustantivos y otros premodificadores

### A. Adjetivos

#### Descriptores del núcleo sustantivo (adjetivos)

- Indican cualidades de los sustantivos a los que preceden.
- Muchos se reconocen por su terminación (sufijos *-al, -ory, -ant, -ive, etc.*)
- **No tienen forma plural en inglés.** Debemos proporcionarla cuando el sustantivo núcleo esté en plural.
- Generalmente se traducen **después** del núcleo del grupo nominal.
- Pueden ser modificados por **intensificadores del adjetivo: (adverbios):** **very**, **muy**, **extremely**, **extremadamente**, **completely**, **completamente**, etc.
- Cuando hay varios descriptores pueden estar separados por comas (no se usa "and" en la enumeración de adjetivos que preceden al sustantivo)
- A veces se trata de adjetivos compuestos unidos por un guion corto.

35. **Important investments** are needed.

36. The energy sector requires **new proposals**

37. **A very practical perspective** is introduced here.

38. **These introductory remarks** are very clear.

39. **An extremely important function** is being explained.

40. **A well-structured** presentation.

### B. Sustantivos

#### Clasificadores del núcleo sustantivo (sustantivos o adjetivos)

- Cumplen la función de clasificar al sustantivo núcleo dentro de alguna categoría, grupo o clase.
- Se traducen **después** del núcleo generalmente precedidos por la preposición **de**, o alguna otra preposición según sea adecuado para la frase en español si se trata de un sustantivo, y sin preposición se es un adjetivo.
- En el lenguaje técnico o científico son de uso obligado en taxonomías.

41. **Business services.**

42. **Pipeline management.**

43. **High pressure hoses and connectors**

44. **Compatibility certification.**

45. **Voice modulation patterns.**

46. **Turbine efficiency.**

47. **Petrochemical plant.**

48. **Gas compression.**

49. **Arithmetic operation.**

50. **Internal memory**

### C. Palabras terminadas en "-ing"

### C.1. Adjetivos lexicalizados

*Se pueden encontrar en el diccionario (interesting, outstanding)*

**Interesting method** → **Método interesante**

**Outstanding issue** → **Asunto sobresaliente**

### C. 2. Present Participles

*No suelen aparecer en el diccionario con terminación -ing, hay que buscar el verbo raíz.*

*Expresan un evento, acción o estado cuyo sujeto es el núcleo que modifican y esta relación debe expresarse en la traducción, generalmente con “que + verbo conjugado”, o con alguna otra herramienta lingüística disponible.*

A **running engine** → un motor **que funciona/ que está funcionando / en funcionamiento**

### C. 3. Gerunds

*No suelen aparecer en el diccionario.*

*Modifican al núcleo de forma similar a la que lo hacen los sustantivos, ya que tienen características nominales.*

*Se los suele traducir como “preposición + sustantivo o infinitivo”*

*Suelen expresar significados como: propósito, clase, etc.*

**Wiring techniques** (v- cablear) → Técnicas **de cableado**

**Working environment** → Ambiente **de trabajo**

## D. Palabras terminadas en -ed o Participios Pasados

*Tienen origen verbal.*

*Denotan pasividad y se las traduce con la terminación -ado /-ido*

*Si el verbo es regular, terminan en -ed y si es irregular aparecen en el diccionario como pasado participio de un verbo determinado.*

**Complicated situation** → situación complicada

**Fuel-driven machine** → máquina impulsada por combustible

### -ING vs ED

|                       |                  |
|-----------------------|------------------|
| 1. Activating device  | Activated device |
| 2. Brushing technique | Brushed surface  |
| 3. Coding sheets      | Coded sheets     |
| 4. Heating device     | Heated room      |
| 5. Limiting factor    | Limited capacity |
| 6. Piping system      | Piped system     |
| 7. Processing data    | Processed data   |
| 8. Watering hose      | Watered lands    |

|                      |                                                      |                                                               |
|----------------------|------------------------------------------------------|---------------------------------------------------------------|
| 1. the machine       | 18. some mechanical devices                          | 34. great theories                                            |
| 2. the brick         | 19. a big industrial suburban area                   | 35. thermal qualities                                         |
| 3. his computer      | 20. block construction                               | 36. the customers' needs                                      |
| 4. these brushes     | 21. his deep clear scientific thought                | 37. plans <u>for</u> development                              |
| 5. all faults        | 22. crack control                                    | 38. the atomic nuclei.                                        |
| 6. first stage       | 23. important useful information                     | 39. mass communication                                        |
| 7. many engines      | 24. field tests                                      | 40. communication work                                        |
| 8. some materials    | 25. short construction time                          | 41. a relatively small open area                              |
| 9. other controls    | 26. Einstein's theories                              | 42. <b>the great inventor's</b> original scientific discovery |
| 10. three panels     | 27. tool boxes                                       | 43. wooden knives                                             |
| 11. organic compound | 28. <b>his teacher's</b> notes                       | 44. wooden shelves                                            |
| 12. atomic number    | 29. copper wire                                      | 45. two large, modern factories                               |
| 13. new tools        | 30. <b>the scientists'</b> work                      |                                                               |
| 14. light colour     | 31. information <u>from</u> outer space              |                                                               |
| 15. porous membrane  | 32. huge volume <u>of</u> data <u>for</u> future use |                                                               |
| 16. good materials   | 33. Industrial wealth is important.                  |                                                               |

### 3. LOS POSTMODIFICADORES DE LA FRASE NOMINAL

*Aparecen inmediatamente después del núcleo*

*Son el último elemento a traducir en la frase nominal*

*Su identificación ayuda a identificar el núcleo de la FN porque este se encuentra justo antes.*

#### A. Frases preposicionales

*Son encabezadas por una preposición.*

*Se traducen después del núcleo y de los premodificadores y también clasifican o cualifican al núcleo.*

*Son el tipo de posmodificador más frecuente.*

*Son fáciles de identificar en el texto y buenos predictores de la posición del núcleo (delante de las mismas)*

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Preposiciones</b><br><b>About</b> , acerca de, cerca de, alrededor de, aproximadamente<br><b>Above</b> , por encima de<br><b>Across</b> a través de, del otro lado de<br><b>After</b> , después de, detrás de<br><b>Against</b> , contra<br><b>Along</b> , a lo largo de<br><b>Among</b> , entre<br><b>Around</b> , en , alrededor de,<br><b>At</b> , en a<br><b>Before</b> , antes, frente a,<br><b>behind</b> , detrás <b>below</b> , por debajo de<br><b>Beside</b> , al lado de, cerca de<br><b>Between</b> , entre<br><b>By</b> , por, junto a, hacia, para<br><b>Down</b> , debajo de | <b>Down to</b> : hasta (con sentido descendente) <b>during</b> , durante, mientras <b>For</b> : para, (con sentido de intercambio) en, por <b>From</b> : desde<br><b>In</b> : en, dentro de, de <b>Inside</b> , en el interior de <b>Into</b> , adentro, hacia adentro <b>Like</b> , como<br><b>Near</b> : cerca de <b>Next to</b> junto a<br><b>Of</b> , de <b>Off</b> desde, fuera de, lejos<br><b>On</b> , sobre, encima de <b>Opposite</b> , enfrente de<br><b>Out</b> , fuera, afuera de <b>Outside</b> , afuera<br><b>Over</b> , sobre, encima de | <b>Per</b> , por (al mencionar una medida o una relación) <b>Round</b> , alrededor de, en<br><b>Since</b> , desde , a partir de <b>Till</b> , hasta<br><b>Through</b> , a través de , durante, por medio de<br><b>To</b> : a, para, hacia, hasta <b>Together</b> , junto <b>Together with</b> , junto con <b>Under</b> , debajo de<br><b>Until</b> , hasta<br><b>Up</b> , hacia arriba<br><b>Up to</b> : hasta (con sentido ascendente) <b>Upon</b> , sobre<br><b>While</b> , mientras<br><b>With</b> , con <b>Within</b> , dentro de <b>Without</b> , sin |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

51. The complexity of algorithms.
52. The correctness of algorithms.
53. Typical applications **of** refrigeration and gas compression.
54. Center **for** chemical process safety.
55. The evolution **of** high performance.
56. Origins and development **of** the Argentine Oil Industry.
57. Strategies **for** a rational use **of** energy **in** the industry.
58. University training **in** the work environment.

## B. Cláusulas relativas

*También definen o describen al núcleo*

*Están encabezadas por un pronombre relativo como (where, when, that, which,...) Tienen un verbo conjugado*

The application **that is requesting authorization to use your account** is not recognized.

The material **(that) the engineer recommended** is....

The company **where they work** is....

|                   |                                    |            |
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*Fundamentals of Metallic Corrosion: Atmospheric and Media Corrosion of Metals*

## 2. Marque el sustantivo núcleo y traduzca los siguientes ejemplos:

- a- several organic chemicals
- b- the earth's curvature
- c- a well-developed project
- d- the greatest breakthrough
- e- his academic career
- f- a similar technique
- g- the commercial applications
- h- several scientific societies
- i- the increasing production potencial
- j- a new bridge construction technology
- k- the long-term existing environmental implications.
- l- his contributions to the aerospace industry.
- m- the linear static stress analysis
- n- a leading international petroleum and petrochemical company
- o- a sophisticated new electronic dealing system

## 3. Traduzca

1. Organizations and the Dynamics of the Environment
2. Interoperability Recipes: A Problem-Solution Approach
3. Unconventional Essays on the Nature of Mathematics
4. 3-D Structural Geology: A Practical Guide to Quantitative Surface and Subsurface Map Interpretation
5. 50 Years of Artificial Intelligence
6. 50 Years of EU Economic Dynamics: Integration, Financial Markets and Innovations
7. A Basic Course in Probability Theory
8. A Buyer's and User's Guide to Astronomical Telescopes and Binoculars
9. A Changing World: Challenges for Landscape Research
10. A Short Course in Quantum Information Theory: An Approach From Theoretical Physics
11. A Software-Defined GPS and Galileo Receiver: A Single-Frequency Approach
12. A Tester's Guide to .NET Programming
13. An Introduction to the Theory of Piezoelectricity
14. Bifurcations, Instabilities, Degradation in Geomechanics
15. Nanotechnology and Occupational Health
16. Tensor Algebra and Tensor Analysis for Engineers: With Applications to Continuum Mechanics
17. Thermal Decomposition of Solids and Melts: New Thermochemical Approach to the Mechanism, Kinetics and Methodology
18. Thermal Decomposition of Solids and Melts
19. *New Thermochemical Approach to the Mechanism, Kinetics and Methodology*
20. Metal Fatigue: What It Is, Why It Matters

## LAS PARTES DE LA ORACIÓN

**SUJETO:** contiene una o más frases nominales núcleo: sustantivo (o pronombre)

**PREDICADO:** contiene: una o más frases verbales complementos del verbo  
circunstancias (frases preposicionales) núcleo: verbo

|                                           |                                          |                            |
|-------------------------------------------|------------------------------------------|----------------------------|
| 1. The <u>testing</u> of new cars         | could <u>cause</u> accidents             | in the circuit sometimes.  |
| núcleo                                    | núcleo                                   |                            |
| -----                                     | -----                                    | -----                      |
| Frase nominal                             | frase verbal                             | complemento del verbo      |
| -----                                     | -----                                    | -----                      |
| SUJETO                                    | PREDICADO                                | circunstancia de lugar.    |
|                                           |                                          | circunstancia de tiempo    |
| 2. At low temperatures,                   | some <u>objects</u> <u>are</u> luminous. |                            |
| -----                                     | -----                                    | -----                      |
| circunstancia de condición o contingencia | frase nominal                            | verbo complemento del suj. |
| -----                                     | -----                                    | -----                      |
| PREDICADO                                 | SUJETO                                   | PREDICADO                  |

- **LOS COMPLEMENTOS**, tradicionalmente llamados **Objeto directo, Objeto indirecto y Complemento del sujeto, o del verbo o preposicional** son palabras, o grupos de palabras que añaden detalles, limitan o complementan lo expresado por el verbo. A veces aparecen después del verbo solamente para complementar información sobre el sujeto ("luminous", después del verbo to be en el ejemplo 2. agrega un atributo al sujeto "objects".)
- Se trata de **frases nominales** que siguen al verbo y cuyo núcleo es **un sustantivo**, o, en su defecto, **un adjetivo**, como en el ejemplo 2. que se presenta más arriba. En el caso del ejemplo 1. , el objeto del verbo "causar" es "accidentes" (esta palabra es un sustantivo)
- A veces la frase nominal del complemento ha sido reemplazada por un **pronombre Objetivo (clítico): me** (a mi, mi, ) **us** (a/nosotros, nos) **you** ( te, ti,) **him, her** (el, ella, se, si) **them** (ellos, los, les) **it** (lo, la, le, a el/ella)

**LOS ADJUNTOS CIRCUNSTANCIALES**, son palabras o grupos de palabras que identifican circunstancias que acompañan a la acción o estado indicado por el verbo (Ej. 1. 2.) • Las **CIRCUNSTANCIAS** indicadas pueden ser:

- a) de LUGAR (responden a la pregunta ¿dónde? ¿a qué distancia?)
- b) de TIEMPO (¿cuándo? ¿durante cuánto tiempo?)
- c) de MODO (¿cómo? ¿como qué?)
- d) de CANTIDAD (¿cuánto?)
- e) de MEDIO O INSTRUMENTO (¿con qué)
- f) de CAUSA (¿por qué )
- g) de FIN (¿para qué?)

- h) de **COMPAÑIA** (¿con quién? ¿quién más? ¿qué más?)
- i) de **TEMA** (¿sobre qué? ¿de qué?)
- j) de **ROL** (¿a modo de qué? ¿como qué?)
- k) de **CONTINGENCIA** o **CONDICIÓN** (¿bajo qué condiciones? ¿en caso de qué? ¿a pesar de qué? ¿a falta de qué?)
- l) de **ÁNGULO** o **PUNTO DE VISTA** (¿según quién? ¿de acuerdo con quién o qué?)

- Las palabras que constituyen los **COMPLEMENTOS CIRCUNSTANCIALES** son:

a) **ADVERBIOS** (ayer, aquí, rápidamente (**AD VERBIO SIGNIFICA “QUE ACOMPAÑA AL VERBO”**))

b) **GRUPOS PREPOSICIONALES** (una frase nominal introducida por una preposición. El conjunto tiene

función adverbial) (**en** Mendoza, **con** María, **según** el profesor. Estas frase preposicionales pueden contener un pronombre objetivo reemplazando a la frase nominal:

**mi/conmigo; ti, contigo, si, consigo, con/para el, con ella, con nosotros, con ellos**

- Muchos **ADVERBIOS DE MODO** pueden reconocerse por su terminación **–ly** que se traduce como **–mente**. La mayoría se forma a partir de adjetivos, por lo que si el adverbio no aparece en el diccionario, se puede eliminar la terminación **–ly**, buscar el adjetivo, y luego transformarlo nuevamente en adverbio agregando la terminación **–mente** o su equivalente castellano. ( *general – generally    simple – simply    principal – principally*)

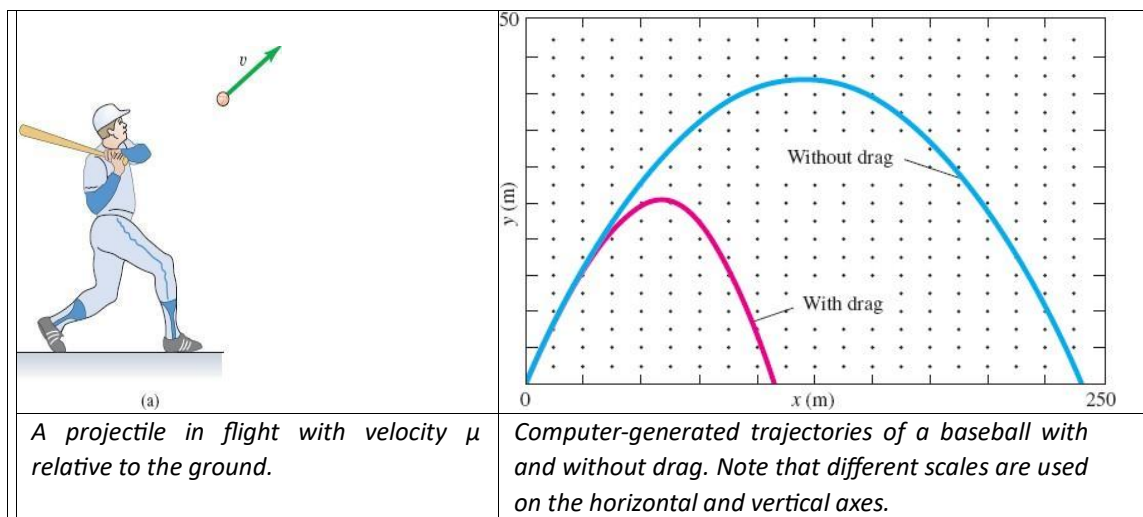
Lea el siguiente texto. Intente reconocer los circunstanciales, sujeto y verbo

From: Young and Freedman. **University Physics. Part one: Mechanics**. Copyright © 19952008 by Addison Wesley

### **Topic 1 | Projectile Motion with Air Resistance A Case Study in Computer Analysis**

In our study of projectile motion, we assumed that air-resistance effects are negligibly small. But, in fact, air resistance (often called *air drag*, or simply *drag*) has a major effect on the motion of many objects, including tennis balls, bicycle riders, and airplanes. In Section 5.3 we considered how a fluid resistance force affected a body falling straight down. We'd now like to extend this analysis to a projectile moving in a plane.

It's not difficult to include the force of air resistance in the equations for a projectile, but solving these equations for the position and velocity as functions of time, or the shape of the path, can get quite complex. Fortunately, it is fairly easy to make quite precise numerical approximations to these solutions, using a computer. That's what this section is about.



- Traducir el texto, el título, la bajada o copete y los epígrafes.
- Resumir el texto en dos o tres oraciones.
- Considerar la estructura de las siguientes frases nominales extraídos del texto y, decidir si son parte del **sujeto**, del **complemento del verbo** o son **objeto de preposición**. Marcar el núcleo y traducir.
  - our study of projectile motion(1) .....
  - air-resistance effects (1) .....
  - negligibly small (1) .....
  - a major effect on the motion of many objects .....
  - a fluid resistance force (4) .....
  - a body falling straight down (4) .....
  - a projectile moving in a plane (5) .....
  - the force of air resistance (6) .....
  - solving these equations for the position and velocity as functions of time can get complex. (6-7) .....
  - quite precise numerical approximations to these solutions (8) .....

## USO Y TRADUCCIÓN DE LAS FORMAS –ING

- 1- **-ING COMO NÚCLEO DE LA FRASE NOMINAL**  
Global **warming** is the investigators' main concern. (*sustantivo abstracto*)  
**Generating** electrical power by incineration is controversial. (*infinitivo*) They are trying to follow the **programming** devised in advance.  
The **processing** of the data takes place at a very high speed. It's an effective process.
- 2- **-ING COMO PREMODIFICADOR DEL NÚCLEO**  
This is a **time-consuming** method. (*prep + sustantivo; que + verbo; o como adjetivo en –nte/-or/- ble/-ivo.*)  
(*ver premodificadores más arriba para más detalle*)
- 3- **-ING COMO POSTMODIFICADOR DEL NÚCLEO**  
There are controversial methods **generating** electrical power. (*que + verbo*)
- 4- **COMO VERBO PRINCIPAL DE LA FRASE VERBAL EN LOS TIEMPOS PROGRESIVOS O CONTINUOS. (–ando –endo –iendo)**  
Researchers **are exploring** alternative fuels for automobiles and motor vehicles.  
Researchers **have been exploring** alternative fuels for automobiles.  
Researchers **can't have been exploring** alternative fuels for automobiles.
- 5- **COMO VERBO PRINCIPAL EN GRUPOS VERBALES EXPANDIDOS DESPUÉS DE VERBOS COMO STOP, AVOID, LIKE, PREFER, ETC. y A CONTINUACIÓN DE PREPOSICIONES (infinitivo =ar, er, ir ó prep. + sustantivo)**  
They **stopped producing** benzene a month ago.  
They **avoid producing** benzene.  
They **are trying to avoid producing** benzene. They **continued producing** benzene.
- 6- **DESPUÉS DE CONECTORES COMO "THUS" O "THEREBY" (así, de esta manera), O EN AUSENCIA DE LOS MISMOS, MUCHAS VECES DESPUÉS DE UNA COMA (tratándose en ambos casos de cláusulas u oraciones reducidas, donde el sujeto omitido coincide con el de la cláusula completa anterior) –ando/endo/-iendo**  
Many factories pump out untreated detergents, **thus polluting** water.  
Many factories pump out untreated detergents, **polluting** water.
- 7- **EN CIRCUNSTANCIALES DE INSTRUMENTACION, DESPUÉS DE LA PREPOSICIÓN "BY" (por, por medio de) –ando/-endo/-iendo sin la preposición. The**  
plant produces electricity **by burning** the fuel.
- 8- **DESPUÉS DE UNA PREPOSICIÓN (distinta de –by). (preposición + el verbo en infinitivo)**  
There are not good locations **for building** large dams.
- 9- **DESPUÉS DE LAS PALABRAS "WHEN", "IN" u "ON" (ELIPSIS) ("AL + Infinitivo" o "CUANDO SE + V)**  
**When considering** such factors, we must take special care.  
**On considering** such factors, we must take special care.
- 10- **TÍTULOS (sustantivo abstracto, el/la + sustantivo abstracto o "cómo + infinitivo")**  
"Installing the computer"

#### **Ejemplos de –ing dentro de la frase nominal**

1. Water Handling

2. Acoustic Signal Processing
3. Electrical Engineering
4. Our understanding of the universe.
5. The heating of iron or steel to a high temperature causes oxidation.
6. Specifying both the number of protons and the number of neutrons is necessary to identify the nucleus.
7. all engineering disciplines
8. signal-conditioning circuits
9. recording or display devices
10. the corresponding change in an electrical variable
11. sewing machine
12. This computer runs in two operating modes.
13. She will discover the rules for recombining sounds into words.
14. This is a composite material having a high thermal conductivity and a small thermal expansion coefficient.
15. These are the equations describing the behaviour of fundamental particles.
16. Storing operations are difficult to carry out if you cannot handle the machine.

### PRE Y POSTMODIFICACIÓN CON –ED/3ª COL.VERBOS IRREG.

*El participio pasado de verbos regulares termina en –ed, y en el caso de los irregulares corresponde a la tercera columna de la Tabla de Verbos Irregulares.*

*Se traducen con la terminación –ado –ido en el castellano, o terminaciones equivalentes.*

1. The instrument used in conducting experiment is subject to the laws of nature.
2. The total *work per unit charge* associated with the motion of charge between two points is called voltage.
3. In protected mode, the computer reserves a predetermined amount of memory for an executing program.
4. An operating system using protected mode allocates memory among several different tasks.
5. This shows data obtained with an experimental MHD-power plant.
6. Figure 2.4 shows an automotive battery connected to a variety of circuits in an automobile.

#### Traduzca

1. An integrated application for historical knowledge management with mould design navigating process.
2. A multi-objective mixed-integer programming model for a multi-floor facility layout.
3. Representing function-technology platform based on the unified modelling language.
4. Reconfigurable manufacturing systems: the state of the art.
5. The next-generation research facility.
6. Optimal pricing policy for a deteriorating product by dynamic tracking control.
7. Production and quality control policies for deteriorating manufacturing system.
8. Proving external validity of ergonomics and quality relationship through review of real-world case studies.

9. A decision model for the analysis of ergonomic investments.
10. Improving Industrial Engineering Performance through a Successful Project Management Office.
11. Balancing and sequencing of parallel mixed-model assembly lines.
12. An improved self-starting cumulative count of conforming chart for monitoring high-quality processes under group inspection.
13. Optimal replacement policy and inspection interval for condition-based maintenance.
14. ORGANIZATIONAL AND INDIVIDUAL LEARNING AND FORGETTING.
15. A two-step heuristic algorithm for layout design of unequal-sized facilities with input/output points.
16. An entropy-based approach for assessing a product's BOM blocking effect on a manufacturing process flow.
17. Assembly sequence influence on geometric deviations propagation of compliant parts.
18. The double row layout problem.
19. Analysing critical interaction instances in collaborative concurrent engineering: satellite development.
20. Analysis of systematic engineering design paradigms in industrial practice: Scaled experiments.
21. A dynamic model for serial supply chain with periodic delivery policy.
22. Complexity analysis of an operation in demand-based manufacturing.
23. Effects of operating speed on production quality and throughput.
24. DFSME: design for sustainable manufacturing enterprises (an economic viewpoint).
25. Dynamic card number adjusting strategy in card-based production system.
26. Analysis of systematic engineering design paradigms in industrial practice: A survey.
27. Order-oriented cooperative sequencing optimisation in multi-mix-model assembly lines.

#### **Artificial Life and Robotics**

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Artificial Life and Robotics is an international journal publishing original technical papers and authoritative state-of-the-art reviews on the development of new technologies concerning artificial life and robotics especially computer-based simulation and hardware for the twenty-first century. This journal covers a broad multidisciplinary field including areas such as artificial brain research artificial intelligence artificial life artificial living artificial mind research chaos cognitive science complexity evolutionary computations fuzzy control genetic algorithms innovative computations micromachines mobile vehicles neural networks neurocomputers neurocomputing technologies and applications robotics and virtual reality. Hardware-oriented submissions are particularly welcome.

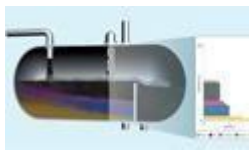
**Tracerco is a world leading industrial technology company providing unique and specialised detection, diagnostic and measurement solutions.**

## **Oil & Gas Processing**

**Oil processing** and **gas processing** involves both the extraction of crude hydrocarbon material from the ground and then the separation of the oil and gas from the water, sand and other solid materials that come up during extraction. The company provides a range of scanning and tracer technologies at both the extraction and separation stages enabling real time characterization of conditions in the process in much the same way as analogous techniques (e.g. CT scan, angiogram) are used in the medical world.

The **separation of oil and gas** from its by-products, sand and water, is at the heart of all hydrocarbon production facilities. Tracerco has developed a range of services and Instrumentation that is used to optimise the performance of the separator systems used by our customers, by measuring in real-time what is actually occurring within the process vessels.

## **Featured Products and Services**



separators, pipes. separator.

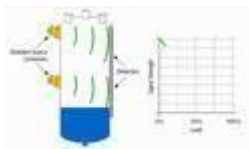
### **Profiler**

Allows customers to monitor, control and optimise phase The and interface levels in tanks,



### **Separator Study**

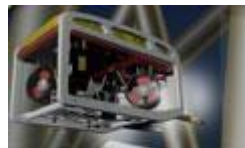
ability to assess the performance of production



information. steel jacket members.

### **Level Gauge FMI**

A custom designed nucleonic and level system to provide accurate phase level inspecting



Minimize both the time highly cost associated with the integrity of



### **Slug Monitor**

The TRACERCO™ Slug the Monitor allows the detection the extent of mechanical and slugs.



### **Scan**

A technique to investigate process conditions and control of process

damage that exist within a distillation column.

**Accident rate** A measure of the disabling accidents occurring in any specified exposure of workers to employment hazards. 1. Frequency rate—the number of disabling or lost-time accidents in an exposure of 1 million labor-hours worked. 2. Severity rate—the total number of lost labor-days charged to disabling accidents during an exposure of 1 million labor-hours worked.

**Activity network** A representation of two particular aspects of a project: (1) the precedence relationship among the activities and (2) the duration of each activity.

**Administration** The function that is concerned with the determination of the general objectives, major policies, and organizational structure of an enterprise.

**Algorithm** A prescribed set of well-defined rules for the solution of a problem in a finite number of steps.

**Allowance** A time increment included in the allowed time for an operation to compensate the worker for production lost due to fatigue and normally expected interruptions.

### USOS DEL INFINITIVO CON “TO”

| Función:                                                                                                                       | Traducir como:                                                                                  | Oraciones |
|--------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-----------|
| <b>Dentro de la frase nominal</b>                                                                                              |                                                                                                 |           |
| 1. Núcleo de la frase nominal                                                                                                  | infinitivo                                                                                      | 1.2.3     |
| 2. Postmodificador del núcleo                                                                                                  | - <i>para</i> + verbo infinitivo<br>-preposición requerida+ verbo infinitivo                    | 4.5.6.    |
| 3. Después de palabras interrogativas<br>WHAT- WHICH - WHERE – WHEN – WHO – WHY –<br>HOW HOW LONG – HOW FAR – HOW DEEP-<br>ETC | infinitivo                                                                                      | 7         |
| 4. Anticipador “IT” + Verbo BE o similar<br>(LIKE, SEEM, LOOK) + To infinitive                                                 | infinitivo                                                                                      | 8         |
| <b>Dentro de la frase verbal y en el predicado de la oración.</b>                                                              |                                                                                                 |           |
| 5. Circunstancial de propósito o finalidad.                                                                                    | <i>“para”</i> + infinitivo                                                                      | 9.10.11   |
| 6. Después de verbo BE indicando futuro.                                                                                       | <i>Ir a/ Estar por / estar a punto de (Be + about + to infinitive)</i>                          | 12.13     |
| 7. Después de verbo conjugado indicando:                                                                                       |                                                                                                 |           |
| Temporalidad: begin, continue, start                                                                                           | preposición requerida por el verbo + infinitivo; o <i>ando-endo</i> si así lo requiere el verbo | 14.15     |
| Grado de certeza: seem, appear                                                                                                 | <i>parecer</i> + infinitivo                                                                     | 16.17     |
| Esfuerzo, volición o logro:<br>try, manage, succeed, decide, want, etc.                                                        | preposición requerida por el verbo + infinitivo.                                                | 18.19.20  |
| Modo de realizar una acción:<br>hesitate, happen, tend,                                                                        | preposición requerida + infinitivo                                                              | 21.22.23  |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                            |            |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|------------|
| Causante de una acción (seguido por la persona gramatical que la realiza):<br>help, encourage, enable, allow, put, etc<br>(agree/acordar, allow/ permitir, claim/sostener, demand/exigir, enable/facultar, permitir encourage/incentivar, alentar, forbid/prohibir, indicate/indicar, order/ordenar, plead/suplicar, promise/prometer, propose/proponer, remind/report/informar, request/pedir, require/solicitar, tell/decir, ask/preguntar, pedir, threaten/amenazar, warn/advertir | (inf. o subjuntivo)                                        | 24.25.26   |
| 8. Después de un adjetivo en el complemento del verbo.                                                                                                                                                                                                                                                                                                                                                                                                                                | Preposición requerida por el adjetivo + infinitivo         | 27.28      |
| 9. Después de la forma pasiva de algunos verbos que agregan significado modal: be supposed to, be allowed to, be required to, etc                                                                                                                                                                                                                                                                                                                                                     | 17 infinitive o subjuntivo                                 | 29.        |
| 10. Pasivas especiales con verbos de discernimiento que acompañan a los procesos de investigación, descubrimiento y comunicación.                                                                                                                                                                                                                                                                                                                                                     | Verbo pasivo + <i>QUE</i> + Sujeto + Infinitivo            | 30.        |
| 11. Después de los mismos verbos de discernimiento del punto 10, pero en voz activa.                                                                                                                                                                                                                                                                                                                                                                                                  | <i>QUE</i> + verbo conjugado en el tiempo que corresponda. | 30.31. 32. |
| 12. Después de “too” (demasiado) “enough” (suficiente)                                                                                                                                                                                                                                                                                                                                                                                                                                | <i>para</i> + infinitivo                                   | 33         |

1. To see is to believe.
2. To specify both the number of protons and neutrons is necessary to identify a nucleus.
3. To end our dependence on rapidly dwindling oil supplies is the main concern of our government.
4. It's time to think for yourself again.
5. The tools to excavate have been stored nearby.
6. All engineering disciplines require the ability to perform measurements of some kind.
7. This book will show you how to convert data into knowledge.
8. It is essential to have some professional experience before you get your degree.
9. We have thermal printer mechanisms to meet any demand.
10. To put more capabilities into the same space, you need smaller and smaller components.
11. Now we are repricing everything to save you time and money.
12. They are to build new schools.
13. It is about to boil. It is to boil in five minutes.
14. The company began to restore the fast-crumbling historical monument.
15. The wind will continue to blow the whole day.
16. They seem not to understand our gestures.
17. There seems to be considerable research in this field.
18. Have you ever tried to assemble a radio?
19. We tried to push the car but we were not able to move it.
20. These institutions have managed to provide substantial training for mechanical engineers.
21. He hesitated to pour the frozen liquid.
22. The column tends to tilt to the left.
23. Personal computers help the economy to keep going.

24. This workshop will allow students to gain valuable experience.
25. The software enables them to perform a wider range of tasks.
26. I'm anxious to help. I'm willing to help. I'm almost determined to help. I'm reluctant to help.
27. The project was difficult to put into practice.
28. You are supposed to finish your project. / You were allowed to use the laboratory. / They will be expected to finish on time. / The students have been prohibited to use this device.
29. The gas was believed to be inert. / They believed the gas to be inert.
30. The experiments proved his theory to be correct.
31. Scientists do not believe supernovae to be explosive stars that occur in other galaxies only.
32. The temperature was too high to conduct the experiment./ high enough to conduct the ...

Use of an on-location dewatering unit during operations has become mandatory in some parts of the world, such as the Arctic, jungles, and rain forests and in close proximity to urban environments. Additionally, on-location dewatering units may be mandated when drilling near freshwater sources, near sensitive fishing areas, or where concern for protecting ocean species is very strong or regulated.

With the pH of fluid typically being between 7.0 and 10.0, the colloidal particles in the fluid **tend to be** negatively charged. The negative charges repel the particles, preventing them from clumping together **to form** larger particles. **To remove** these submicron colloids is difficult, even with a high-speed centrifuge with 2000 g force. Therefore, **to remove** these tiny particles in the fluid, it is first necessary **to treat** the fluid with chemicals **to agglomerate** the solids **to make** them large enough **to be removed** by a high-speed centrifuge.

The process of agglomeration **to create** large, dense clusters requires three steps:

1. Destabilize the submicron particles so they no longer repel each other.  
This is easily achieved by lowering the pH from 7.0\_10.0 to approximately 5.5.
2. Coagulate or bring together the fine solids—create an attraction between the particles.
3. Flocculate, bundle, or wrap together **to create** large dense clusters.

#### **Waste Management**

Drilling Fluids Processing Handbook

## **TIEMPOS VERBALES**

### **MODALES**

#### **THERE + BE**

| Tiempos         | Simples                                                                                                         | Continuos                                             | Perfectos                                                          |
|-----------------|-----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|--------------------------------------------------------------------|
| <b>Presente</b> | <b>Aux: do- does</b><br>(no se traduce)                                                                         | <b>Aux: be: am-is- are</b> (se traduce <b>estar</b> ) | <b>Aux: Have – Has</b><br>(se traduce <b>haber</b> )               |
|                 | + Verbo en su forma simple y sin auxiliar en el afirmativo.<br>La tercera persona singular lleva <b>- s/-es</b> | + Verbo seguido de la forma <b>ING.</b> (ando endo)   | +Verbo en participio pasado <b>–ED</b> o tercera columna (ado.ido) |

|               |                                                                                                                                                                                                                                                                     |                                                                                                                                                                                   |                                                                                                                                                  |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
|               | <i>I investigate</i><br>Yo investigo <i>He investigates</i> El investiga<br><i>Do I investigate?</i><br>¿Investigo?<br><i>Does he investigate?</i><br>¿Investiga?<br><i>I don't investigate.</i><br>No investigo.<br><i>He doesn't investigate</i> El no investiga. | <i>They are investigating</i><br>Están investigando <i>He is investigating.</i> Está investigando. Is he investigating?<br><i>Are they investigating?</i><br>¿Están investigando? | <i>I have investigated</i><br>He investigado<br><i>He has investigated</i> El ha investigado <i>Have they investigated?</i><br>¿Han investigado? |
| <b>Pasado</b> | <b>Aux: did</b> (no se trad.)                                                                                                                                                                                                                                       | <b>Aux: be: was – were</b>                                                                                                                                                        | <b>Aux: had</b>                                                                                                                                  |
|               | + verbos regulares terminados en – <b>ED</b> , o irregulares segunda columna.                                                                                                                                                                                       | +Verbo seguido de la forma – <b>ING.</b> (ando endo)                                                                                                                              | +Verbo en participio pasado (regulares terminan en – <b>ED</b> ) o <b>tercera columna</b> de irregulares <b>ado.ido</b>                          |
|               | <i>I investigated.</i> Yo investigaba. Yo investigué.<br><i>Did I investigate?</i><br>¿Investigué?<br><i>I didn't investigate.</i><br>No investigué.                                                                                                                | <i>I was investigating.</i><br>Estaba investigando.<br><i>Estuve investigando</i>                                                                                                 | <i>I had investigated</i> Había investigado.                                                                                                     |
| <b>Futuro</b> | <b>Aux. Will/shall</b> (no se traduce)                                                                                                                                                                                                                              | <b>Aux: Will be</b> (estar en futuro)                                                                                                                                             | <b>Aux: Will have</b> (haber en futuro)                                                                                                          |
|               | + Verbo principal en su forma simple. (se traduce en futuro)                                                                                                                                                                                                        | +Verbo seguido de la forma – <b>ING.</b> (ando endo)                                                                                                                              | +Verbo en participio pasado (regulares terminan en – <b>ED</b> ) o <b>tercera columna</b> de irregulares <b>ado.ido</b>                          |
|               | <i>I will investigate</i><br>Investigaré<br><i>Will I investigate?</i><br>Investigaré?<br><i>I won't investigate.</i><br>No investigaré.                                                                                                                            | <i>I will be investigating</i> Estaré investigando                                                                                                                                | <i>I will have investigated</i><br>Habré investigado                                                                                             |

|                    |                                                                               |                                                      |                                                                                                                  |
|--------------------|-------------------------------------------------------------------------------|------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
|                    |                                                                               |                                                      |                                                                                                                  |
| <b>Condicional</b> | <b>Aux. would</b> (no se traduce)                                             | <b>Aux. would be</b> (estaría)                       | <b>Aux. would have</b> (habría)                                                                                  |
|                    | +Verbo principal en su forma simple. (se traduce en condicional – <b>ia</b> ) | +Verbo seguido de la forma – <b>ING.</b> (ando endo) | +Verbo en participio pasado (regulares terminan en – <b>ED</b> ) o tercera columna de irregulares <b>ado.ido</b> |

|                                                                                                      |                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                       |
|------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                      | <i>I would investigate</i><br>Investigaría<br><i>Would I investigate?</i><br>Investigaría?<br><i>I wouldn't investigate.</i> Yo no investigaré                                                                                                     | <i>I would be investigating</i> Estaría investigando                                                                                                                                                                                                                                                    | <i>I would have investigated</i> Habría investigado                                                                                                                                                   |
| <b>Modales</b>                                                                                       | <b>can – could- may – might<br/>be able to</b><br><br><b>must – mustn't ought to – should – need to<br/>have to – had to</b>                                                                                                                       | <b>auxiliar modal</b><br><br><b>+<br/>be</b>                                                                                                                                                                                                                                                            | <b>auxiliar modal</b><br><br><b>+<br/>have</b>                                                                                                                                                        |
|                                                                                                      | + verbo en su forma básica.                                                                                                                                                                                                                        | + verbo + ING.                                                                                                                                                                                                                                                                                          | + verbo en participio pasado o tercera col.                                                                                                                                                           |
|                                                                                                      | <i>I can investigate.</i><br>Puedo investigar <i>I could investigate.</i><br>Podría investigar <i>I may investigate</i><br>Puedo investigar<br><i>I had to investigate</i><br>Tenía que investigar <i>I must investigate</i> Debo investigar. etc. | <i>I can be investigating</i> Puedo estar investigando. <i>He must be investig.</i><br>Debe estar invest.<br><i>They should be investigating.</i><br>Deben estar invest.<br><i>She can't be investigating.</i> No puede estar investigando <i>She has to be investigating.</i> Tiene que estar inv. etc | <i>He can't have investigated.</i><br>No puede haber investigado. <i>He must have investigated.</i><br>Debe haber investigado. <i>He shouldn't have investigated.</i> No debería haber investig       |
| <b>There + Be</b><br>(indica existencia= haber<br><b>SIEMPRE SE TRADUCE EN SINGULAR</b>              | <b>tiempos simples,</b> <i>There is computer.</i> = Hay<br><i>There was...</i> Hubo<br><i>There were many computers</i> = Hubo muchas computadoras<br><i>There will be</i>                                                                         |                                                                                                                                                                                                                                                                                                         | <b>perfectos,</b><br><i>There has/had been a difficulty.</i>                                                                                                                                          |
| <b>Formas pasivas (Be + participio pasado)</b><br>El tiempo lo determina la forma del verbo<br>TO BE | <i>The issue is discussed</i> El asunto es discutido Se discute el asunto<br><i>It was discussed.</i> Se discutió<br><i>It will be discussed.</i> Se discutirá.<br><i>It would be discussed.</i> Se discutiría.                                    | <i>The issue is being discussed.</i> El asunto está siendo discutido. Se está discutiendo<br><i>It was being discussed.</i> Se estaba discutiendo.                                                                                                                                                      | <i>The issue has been discussed.</i><br>El asunto ha sido discutido.<br>Se ha discutido...<br><i>It had been discussed.</i><br>Se había discutido. <i>It will have been ...</i><br>Se habrá discutido |

## VERBOS MODALES

### VERBOS MODALES

- Los verbos modales permiten detectar la "presencia del autor" en el texto, en el sentido de que indican **hipótesis, posibilidades, sugerencias, certezas, promesas, obligaciones, etc.**
- Son verbos auxiliares que, a diferencia de los auxiliares estudiados hasta ahora, sí tienen un contenido semántico además del gramatical, ya que incorporan los significados mencionados al verbo principal del grupo, que ahora está expandido y expresa un sentido más complejo.

#### • PODER

|                                         |                                                  |                                                                                                                                     |
|-----------------------------------------|--------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| <b>can</b> (presente)                   | can't / cannot                                   | <b>poder</b> (tener la capacidad, posibilidad o permiso de hacer algo)                                                              |
| <b>could</b> (pasado de <i>can</i> )    | could not couldn't                               | <b>podía o pudo</b> (tenía o tuvo capacidad, o permiso de hacer algo)                                                               |
| <b>could</b> (condicional )             |                                                  | <b>podría</b> (tendría la capacidad o permiso para hacer algo) Es una posibilidad más remota que la que expresa <i>can</i> .        |
| <b>be able to</b> equivale a <b>can</b> | isn't able to / aren't / won't be able to / etc. | <b>poder, ser capaz de</b>                                                                                                          |
| <b>may</b> (presente)                   | may not                                          | <b>Poder-puede</b> (existir la posibilidad o tener permiso para hacer algo)                                                         |
| <b>might</b> (pasado de <i>may</i> )    | might not mightn't                               | <b>podía –</b> (poco frecuente)                                                                                                     |
| <b>Might</b> (posibilidad remota)       |                                                  | <b>podría –</b> (tendría la posibilidad o el permiso para hacer algo) Es una posibilidad más remota que la que expresa <i>may</i> . |

#### • DEBER

|                                       |                                                      |                                                                                                        |
|---------------------------------------|------------------------------------------------------|--------------------------------------------------------------------------------------------------------|
| <b>must</b> (presente)                | must not mustn't                                     | <b>deber</b> (tener la obligación o la necesidad de hacer algo) Es también un consejo o una deducción. |
| <b>have to</b> equivale a <b>must</b> | don't have to / doesn't have to / won't have to, etc | <b>deber, tener que</b>                                                                                |
| <b>should</b> (presente)              | should not shouldn't                                 | <b>deber</b> (tener la obligación moral, o la necesidad de hacer algo)                                 |
| <b>should</b> (condicional)           |                                                      | <b>debería</b> (tendría la obligación moral de hacer algo /sugerencia                                  |
| <b>ought to</b>                       | ought not oughtn't                                   | <b>Debe /debería</b> (tener la obligación de hacer algo) Implica obligación y recomendación.           |

1. A substance **can change** from one state into another.
2. A substance **is able to change** from one state into another.
3. This substance **was able to change** from one state into another.
4. This substance **has been able to change** from one state into another.

5. Metals which cool rapidly **may fracture/could fracture/might fracture**.
6. An expert **should perform / must perform / can perform / ought to perform** the operation.
7. The study of the surface **could not determine** oil presence. Consequently, we **had to carry out** a geological survey of the underground rock structure.
8. These bearings are popular because they **can take** very heavy loads and are self-aligning.
9. These bearings are popular because they **are able to take** very heavy loads and are self-aligning.

### AUXILIARES MODALES EN PASADO

- Los verbos modales en las formas ya estudiadas (**MODAL + VERBO PRINCIPAL**) indican **tiempo presente y/o futuro**.
- **COULD** se puede tomar como **pasado de can (habilidad)** o como **condicional**, y lo mismo sucede con **MIGHT (pasado de may o condicional)**, aunque la referencia al pasado se da en muy pocos contextos:  
I can't move the block. He told me that he **couldn't move** the block.  
He may not come. I knew that he **might not come**.
- Cuando el AUXILIAR MODAL va seguido de una **FORMA PERFECTA (HAVE + ED O TERCERA COLUMNA)**, entonces la indicación temporal es claramente **el pasado**, el verbo **HAVE** se traduce como **HABER** y la traducción de los grupos verbales es la siguiente:

|                                   |                                      |                                                         |
|-----------------------------------|--------------------------------------|---------------------------------------------------------|
| <b>could have –ed/3º col.</b>     | podría haber + participio pasado     | posibilidad en pasado                                   |
| <b>might have –ed/3º col.</b>     | podría haber + participio pasado     | posibilidad en pasado                                   |
| <b>should have –ed/3º col.</b>    | debería haber + participio pasado    | obligación en pasado                                    |
| <b>shouldn't have –ed/3º col.</b> | no debería haber + participio pasado | acción que se concretó pero que no debió haberse hecho. |
| <b>ought to have –ed/3º col.</b>  | debió haber + participio pasado      | obligación en pasado                                    |
| <b>oughtn't have –ed/3º col.</b>  | no debió haber + participio pasado   | acción que se concretó pero que no debió haberse hecho. |
| <b>must have –ed/3º col.</b>      | debe haber + participio pasado       | conclusión sobre el pasado                              |
| <b>can't have –ed/3º col.</b>     | no puede haber + participio pasado   | conjetura o conclusión                                  |
| <b>should have –ed/3º col.</b>    | debió haber + participio pasado      | conclusión en pasado                                    |
| <b>would have –ed/3º c</b>        | habría + participio pasado           | <b>condicional perfecto</b>                             |

>Los modales en pasado se combinan también con la frase de existencia **THERE BE**, obteniéndose las correspondientes formas pasadas **THERE + MODAL + HAVE BEEN**

- *There could have been*                      *podría haber habido* (posibilidad de existencia en pasado)
- *There should have been*                *debería/debió haber habido* (obligación de existencia en pasado)
- *There must have been*                   *debe haber habido* (conjetura de existencia en pasado)

| <b>There be conjugado</b>                                | <b>Estructura en Inglés</b>      | <b>Traducción al Español</b> |
|----------------------------------------------------------|----------------------------------|------------------------------|
| <b>Presente Simple</b>                                   | There is / There are             | Hay                          |
| <b>Pasado Simple</b>                                     | There was / There were           | Había / Hubo                 |
| <b>Futuro Simple</b>                                     | There will be                    | Habrà                        |
| <b>Presente Perfecto</b>                                 | There has been / There have been | Ha habido                    |
| <b>Pasado Perfecto</b>                                   | There had been                   | Había habido                 |
| <b>Futuro Perfecto</b>                                   | There will have been             | Habrà habido                 |
| <b>Condicional Simple</b>                                | There would be                   | Habría                       |
| <b>Condicional Perfecto</b>                              | There would have been            | Habría habido                |
| <b>Modal: Posibilidad (Presente)</b>                     | There can be / There could be    | Puede haber / Podría haber   |
| <b>Modal: Obligación / Deducción (Presente)</b>          | There must be                    | Debe haber                   |
| <b>Modal: Recomendación / Expectativa (Presente)</b>     | There should be                  | Debería haber                |
| <b>Modal: Posibilidad (Pasado / Perfecto)</b>            | There could have been            | Podría haber habido          |
| <b>Modal: Deducción (Pasado / Perfecto)</b>              | There must have been             | Debe haber habido            |
| <b>Modal: Expectativa incumplida (Pasado / Perfecto)</b> | There should have been           | Debería haber habido         |

1. The solution could have been contaminated by dirt in the test tube.
2. There ought to have been more accurate forecasts.
3. There could have been a mistake.
4. There should have been a serious investigation.
5. These modifications would not have been necessary.
6. By the end of Chapter 8, you should have accomplished the following objectives:
7. In a practical machine, for example, one might have had as many as 60 segments, and the variation of  $\gamma$  from  $90^\circ$  would have been only  $\pm 3^\circ$ , with a torque fluctuation of less than 1 percent.

## 16.1 ELECTRICITY AND MAGNETISM

In the early 1800s, H. C. Oersted, a Danish physicist, had proposed the notion that the phenomena of electricity and magnetism are interconnected. Oersted had shown that an electric current produces magnetic effects (more specifically, a magnetic field). Soon after, the French scientist André Marie Ampère expressed this relationship by means of a precise formulation, known as *Ampère's law*. A few years later, the English scientist Faraday illustrated how the converse of Ampère's law also holds true, that is, that a magnetic field generates an electric field; in short,

*Faraday's law* states that a changing magnetic field gives rise to a voltage.

We shall undertake a more careful examination of both Ampère's and Faraday's laws in the course of this chapter.

**A. Traducir las siguientes oraciones y las variantes dadas.**

- |     |                                                                     |
|-----|---------------------------------------------------------------------|
| 1.  | The industrialized countries experienced a serious energy shortage. |
| 2.  | have experienced                                                    |
| 3.  | will have experienced                                               |
| 4.  | had experienced                                                     |
| 5.  | have been experiencing                                              |
| 6.  | had been experiencing                                               |
| 7.  | would have been experiencing                                        |
| 8.  | are to experience                                                   |
|     |                                                                     |
| 9.  | Such a system offers many potential advantages.                     |
| 10. | offered                                                             |
| 11. | is offering                                                         |
| 12. | was offering                                                        |
| 13. | would offer                                                         |
| 14. | should offer                                                        |
| 15. | might offer                                                         |
| 16. | can't offer                                                         |
|     |                                                                     |
| 17. | There are fundamental limitations on photocell efficiency.          |
| 18. | will be                                                             |
| 19. | would have been                                                     |
| 20. | could be                                                            |
| 21. | must be                                                             |
| 22. | were                                                                |
| 23. | have been                                                           |
| 24. | could have been                                                     |
| 25. | might have been                                                     |
| 26. | had been                                                            |

## The Evolution of Petroleum Refining

Until the advent of the gasoline engine in the late 19th century, people used petroleum for what we now consider pretty basic needs—heating, light, and maybe lubrication. Even when Colonel Edwin Drake discovered oil at the depth of 69 feet in Titusville, PA in 1859, his investors were excited because they saw an opportunity to compete with whale oil in the illumination market. For the rest of the century, petroleum refining aimed to remove all the light stuff in crude oil that would eventually be used as gasoline. Refiners burned most of it in a pit, just to get rid of it. Initially they were after kerosene for lanterns. They soon recognized the value of the heavier parts of the crude as fuel oil for raising steam and heating buildings—first industrial and eventually commercial and residential.

As a logical consequence, many of the early automobiles, like the famous Stanley brothers' Stanley Steamer, were steam-driven, using kerosene as fuel. By 1890 inventor-entrepreneurs like Karl Benz, Henry Ford, Ransom Olds, and Dave Buick were marketing cars with internal combustion engines that needed a light fuel—gasoline—that changed forever the profile and purpose of petroleum refining.

After 1900 the demand for gasoline exceeded even the volumes formerly burned off in the pits. The chemical engineers then realized they could convert some of the heavier parts of the crude oil by just cooking it until it cracked into lighter products. They invented the first thermal crackers. Even then, the demand for gasoline grew so rapidly that thermal cracking couldn't keep up efficiently. Just as well, since electricity was wiping out the market for lamp oil all through the world and the jet engine hadn't been commercialized yet. Refiners needed a growth product.

Catalysis was still an emerging science, but by 1916 the grandfather of all cat crackers—a fixed bed design—was in place. In 1936 the Frenchman Houdry put the first continuous flow cat cracker on stream. During World War II refiners responded to the demand for high octane ( $C_8H_{18}$ ) aviation gasoline with alkylation plants and toluene extraction.

Meanwhile the automotive engineers continued to perfect engine design and demanded better quality gasoline. In 1949 the first catalytic

reformer went on stream, improving the octane number of the naphtha already being blended into gasoline.

In the latter part of the 20th century, refiners resorted to innovations from the petrochemicals industry to meet both quality and environmental needs. New gasoline blending components made in refineries now had names like methyl tertiary butyl ether (MTBE), tertiary butyl alcohol (TBA), methanol, and ethanol.

Almost all that is changing today is driven by environmental regulation, causing refiners to tweak the existing processes. The technology introduced in the last 15 years has been centered on catalyst improvement, not new processes. All that should be good news to you. It's tough enough to catch up with what's happening until now, without having to worry about what's changing and becoming obsolete after you've learned it.

# Prospects for Brain–Computer Interfacing

*Team uses brain waves to drive robot.*

A group of undergraduates at Northeastern University demonstrated in June that they could steer a robot via thought. The subject in the experiment watched a computer screen and selected commands using his retina, causing electrical activity in the brain's visual cortex ranging from 4 to 100 hertz. The signals were then translated to a small robot, similar to the Roomba vacuum cleaner.

Electrical engineering professor Deniz Erdogmus, who oversaw the project at Northeastern, says that because the connection between the user and the robot is

Internet-based (you can track the robot over Skype) an operator could control it from a considerable distance away.

(...)

Previous studies had shown that linking mammalian brain matter with electric circuitry has a burning or melting effect on the brain.

However, in the last two decades, advances in computation have enabled researchers to bypass this problem, somewhat, and rely more on devices that don't have to be surgically implanted to collect brain signals.

Electroencephalography (EEG), which the Northeastern University team used, is among the favored of these techniques.

EEG uses a sensor array affixed to a subject's head externally, like a swimming cap.

Because the signal from an EEG is weaker than the signal from a surgically implanted sensor, more guesswork is required to deduce what the brain is trying to communicate; that guesswork is aided through algorithmic math. Noninvasive BCI relies much more on algorithms and mathematic problem solving.

## CHAPTER 1.1

# THE PURPOSE AND EVOLUTION OF INDUSTRIAL ENGINEERING

**Louis A. Martin-Vega**

*Lehigh University*

*Bethlehem, Pennsylvania*

The historical events that led to the birth of industrial engineering provide significant insights into many of the principles that dominated its practice and development throughout the first half of the twentieth century. While these principles continue to impact the profession, many other conceptual and technological developments that currently shape and continue to mold the practice of the profession originated in the second half of the twentieth century. The objective of this chapter is to briefly summarize major events that have contributed to the birth and evolution of industrial engineering and assist in identifying common elements that continue to impact the purpose and objectives of the profession.

### INTRODUCTION

Born in the late nineteenth century, industrial engineering is a dynamic profession whose growth has been fueled by the challenges and demands of manufacturing, government, and service organizations throughout the twentieth century. It is also a profession whose future depends not only on the ability of its practitioners to react to and facilitate operational and organizational change but, more important, on their ability to anticipate, and therefore lead, the change process itself.

The historical events that led to the birth of industrial engineering provide significant insights into many of the principles that dominated its practice and development throughout the first half of the twentieth century. While these principles continue to impact the profession, many of the conceptual and technological developments that currently shape and will continue to mold the practice of the profession originated in the second half of the twentieth century. The objective of this chapter is to briefly summarize the evolution of industrial engineering and in so doing assist in identifying those common elements that define the purpose and objectives of the profession.

## EARLY ORIGINS

---

Before entering into the history of the profession, it is important to note that the birth and evolution of industrial engineering are analogous to those of its engineering predecessors. Even though there are centuries-old examples of early engineering practice and accomplishments, such as the Pyramids, the Great Wall of China, and the Roman construction projects, it was not until the eighteenth century that the first engineering schools appeared in France. The need for greater efficiency in the design and analysis of bridges, roads, and buildings resulted in principles of early engineering concerned primarily with these topics being taught first in military academies (*military engineering*). The application of these principles to nonmilitary or civilian endeavors led to the term *civil engineering*. Interrelated advancements in the fields of physics and mathematics laid the groundwork for the development and application of mechanical principles. The need for improvements in the design and analysis of materials and devices such as pumps and engines resulted in the emergence of *mechanical engineering* as a distinct field in the early nineteenth century. Similar circumstances, albeit for different technologies, can be ascribed to the emergence and development of *electrical engineering* and *chemical engineering*. As has been the case with all these fields, *industrial engineering* developed initially from empirical evidence and understanding and then from research to develop a more scientific base.

### The Industrial Revolution

Even though historians of science and technology continue to argue about when industrial engineering began, there is a general consensus that the empirical roots of the profession date back to the Industrial Revolution, which began in England during the mideighteenth century. The events of this era dramatically changed manufacturing practices and served as the genesis for many concepts that influenced the scientific birth of the field a century later. The driving forces behind these developments were the technological innovations that helped mechanize many traditional manual operations in the textile industry. These include the flying shuttle developed by John Kay in 1733, the spinning jenny invented by James Hargreaves in 1765, and the water frame developed by Richard Arkwright in 1769. Perhaps the most important innovation, however, was the steam engine developed by James Watt in 1765. By making steam practical as a power source for a host of applications, Watt's invention freed manufacturers from their reliance on waterpower, opening up far greater freedom of location and industrial organization. It also provided cheaper power, which led to lower production costs, lower prices, and greatly expanded markets. By facilitating the substitution of capital for labor, these innovations generated economies of scale that made mass production in centralized locations attractive for the first time. The concept of a production system, which lies at the core of modern industrial engineering practice and research, had its genesis in the factories created as a result of these innovations.

### Specialization of Labor

The concepts presented by Adam Smith in his treatise *The Wealth of Nations* also lie at the foundation of what eventually became the theory and practice of industrial engineering. His writings on concepts such as the division of labor and the "invisible hand" of capitalism served to motivate many of the technological innovators of the Industrial Revolution to establish and implement factory systems. Examples of these developments include Arkwright's implementation of management control systems to regulate production and the output of factory workers, and the well-organized factory that Watt, together with an associate, Matthew Boulton, built to produce steam engines. The efforts of Watt and Boulton and their sons led to the planning and establishment of the first integrated machine manufacturing facility in the world, including the implementation of concepts such as a cost control system designed to decrease waste and improve productivity and the institution of skills training for craftsmen. Many features of life in the twentieth century including widespread employment in large-scale factories, mass production of inexpensive goods, the rise of big business, and the existence of a professional manager class are a direct consequence of the contributions of Smith and Watt.

Another early contributor to concepts that eventually became associated with industrial engineering was Charles Babbage. The findings that he made as a result of visits to factories in England and the United States in the early 1800s were documented in his book entitled *On the Economy of Machinery and Manufacturers*. The book includes subjects such as the time required for learning a particular task, the effects of subdividing tasks into smaller and less detailed elements, the time and cost savings associated with changing from one task to another, and the advantages to be gained by repetitive tasks. In his classic example on the manufacture of straight pins, Babbage extends the work of Adam Smith on the division of labor by showing that money could be saved by assigning lesser-paid workers (in those days women and children) to lesser-skilled operations and restricting the higher-skilled, higher-paid workers to only those operations requiring higher skill levels. Babbage also discusses notions related to wage payments, issues related to present-day profit sharing plans, and even ideas associated with the organization of labor and labor relations. It is important to note, however, that even though much of Babbage's work represented a departure from conventional wisdom in the early nineteenth century, he restricted his work to that of observing and did not try to improve the methods of making the product, to reduce the times required, or to set standards of what the times should be.

## EL IMPERATIVO

- *Consiste en el uso de la forma básica del verbo para dar órdenes, instrucciones, o sugerencias. **Fasten your seat-belt.** (Ajuste su cinturón de seguridad)*
- *En general no se usa el sujeto de la oración, el que queda sobreentendido como la segunda persona **you** (singular o plural), aunque a veces puede aparecer delante del verbo. **You fasten your seat-belt.***
- *La forma negativa es **don't, o Don't you... Don't smoke here.** (No fume aquí) **Don't you forget it.** (No lo olvide Ud.)*
- *Puede aparecer intensificado con el verbo **DO+forma base: Do take care!** (tenga cuidado) Otras traducciones posibles para mostrar ese énfasis pueden ser: No deje de..., realmente, asegúrese de ...*
- *También puede aparecer en plural con la forma **Let's o let us + base. Let us consider this hypothesis.** (Consideremos esta hipótesis)*

# WARNING

The Department for Environment, Food and Rural Affairs has issued the following advice on what to do if a low-energy light bulb breaks

مجموعة ورقات البريد  
Group Waraqat.Net

-  Evacuate the room, taking care not to step on the shards of glass littering the floor.
-  Do not use a vacuum cleaner to clear up the mess as the machine's sucking action could spread toxic mercury droplets around the house.
-  Put on rubber gloves and sweep the debris into a dustpan.
-  Place the remains in a plastic bag and seal it.
-  Do not put the bag in a normal household dustbin.
-  Instead, place it in a municipal recycling bin for batteries which also contain mercury or take it to a council dump where it can be disposed of safely.
-  Try not to inhale dust from the broken bulb.

## AFIJOS

### FORMACION DE PALABRAS: PREFIJOS Y SUFIJOS

- Los **AFIJOS** (**prefijos** y **sufijos**) son partículas que se encuentran agregadas al comienzo o al final de una palabra y que alteran el significado de la misma (aunque mantienen la raíz) o cambian la clase de palabra de que se trata (de verbo a sustantivo, o a adjetivo, por ejemplo)
- Estar familiarizado con la existencia de prefijos y sufijos facilita la búsqueda de las palabras en el diccionario, ya que es posible quitarlos, buscar la palabra de origen del vocablo y a partir de ésta llegar al significado en castellano.
- (Se incluyen primero ejemplos de formación de palabras, y, al final, una lista completa de prefijos y sufijos por orden alfabético con sus respectivos ejemplos.)

#### Formación de VERBOS a partir de adjetivos (-ize/-ise, -ify, -en)

|         |            |          |            |
|---------|------------|----------|------------|
| legal   | legalize   | modern   | modernize  |
| popular | popularize | pure     | purify     |
| simple  | simplify   | sharp    | sharpen    |
| short   | shorten    | straight | straighten |

1. They want to modernize the factory.
2. Use these tablets to purify the water.

### Formación de VERBOS a partir de sustantivos (-ify/-efy, -en)

|        |          |        |         |
|--------|----------|--------|---------|
| beauty | beautify | liquid | liquefy |
| length | lengthen |        |         |

### Formación de ADVERBIOS a partir de adjetivos (-ly)

|       |         |        |          |
|-------|---------|--------|----------|
| easy  | easily  | main   | mainly   |
| quick | quickly | stupid | stupidly |

3. These alloys break easily.

### Formación de SUSTANTIVOS a partir de verbos (-er agente, -ment, -tion, -ance, -t)

|         |             |           |              |
|---------|-------------|-----------|--------------|
| sharpen | sharpener   | fasten    | fastener     |
| open    | opener      | teach     | teacher      |
| amaze   | amazement   | develop   | development  |
| pay     | payment     | retire    | retirement   |
| move    | movement    |           |              |
| admire  | admiration  | associate | association  |
| examine | examination | organize  | organization |
| react   | reactance   | weigh     | weight       |

4. The scientists are giving the new instruments a careful examination.

5. The scientists are giving a careful examination to the new instruments.

### Formación de SUSTANTIVOS a partir de adjetivos (-ity/-ty, -ness, -dom, -hood, -ics, -ure, -ian (agente))

|           |            |          |             |
|-----------|------------|----------|-------------|
| pure      | purity     | cruel    | cruelty     |
| odd       | oddity     | stupid   | stupidity   |
| dark      | darkness   | clear    | clearness   |
| aware     | awareness  | free     | freedom     |
| false     | falsehood  | economic | economics   |
| physic    | physics    | moist    | moisture    |
| difficult | difficulty | electric | electrician |

6. Is this a mayor discovery or a scientific oddity?

### Formación de SUSTANTIVOS a partir de otros sustantivos (-age, -ship, , -ery, -ful, -ing, -ism, ist )

|        |           |         |             |
|--------|-----------|---------|-------------|
| drain  | drainage  | scholar | scholarship |
| hard   | hardship  | wine    | winery      |
| spoon  | spoonful  | tube    | tubing      |
| magnet | magnetism | motor   | motorist    |

**Formación de ADJETIVOS a partir de sustantivos (-y, -ic, -ical, -ful, -less, -en, -ive, -like, ous, ward (en dirección a))**

|         |             |         |            |
|---------|-------------|---------|------------|
| dirt    | dirty       | hair    | hairy      |
| atom    | atomic      | biology | biological |
| grammar | grammatical | pain    | painful    |
| care    | careless    | care    | careful    |
| pain    | painless    | gold    | golden     |
| effect  | effective   | tree    | treelike   |
| resine  | resinous    | pore    | porous     |
| back    | backwards   | tree    | treeless   |

7. The operation was painless.

**Formación de ADJETIVOS a partir de verbos (-able, -ible *que se puede*, -ive *que puede*)**

|           |              |         |            |
|-----------|--------------|---------|------------|
| wash      | washable     | debate  | debatable  |
| break     | breakable    | observe | observable |
| recognize | recognizable | detect  | detectable |
| dispose   | disposable   | react   | reactive   |
|           |              |         |            |

8. Those elements are no longer recognizable because they are blended into the surroundings.

**Formación de OPUESTOS (un-, in-, im-, il-, ir-, dis-, de-, non-,)**

|           |              |            |               |
|-----------|--------------|------------|---------------|
| wind      | unwind       | block      | unblock       |
| efficient | inefficient  | possible   | impossible    |
| legal     | illegal      | regular    | irregular     |
| agree     | disagree     | approve    | disapprove    |
| honest    | dishonest    | centralize | decentralize  |
| increase  | decrease     | ascend     | descend       |
| sense     | nonsense     | payment    | nonpayment    |
| resident  | nonresident  | conformist | nonconformist |
| absorbent | nonabsorbent |            |               |

9. There is a lot of disagreement with respect to the last point.

**Indicación de superioridad (super- ultra- over), inferioridad (under-, infra-, ) anticipación (fore, pre-,) posterioridad (post-) repetición (re- ) duplicidad (double-, ambi-) negación (non-, dis-, un-,) oposición (anti-, contra-,) separación (extra-) unicidad (mono-) cantidad (multi-poly- ultra )**

|       |            |           |                |
|-------|------------|-----------|----------------|
| light | ultralight | violet    | ultraviolet    |
| sonic | ultrasonic | developed | underdeveloped |
| load  | overload   |           |                |

|            |                |        |                 |
|------------|----------------|--------|-----------------|
| employed   | underemployed  | red    | infrared        |
| structure  | infrastructure | cast   | forecast        |
| ground     | foreground     | heat   | preheat         |
| determine  | predetermine   | admit  | readmit         |
| distribute | redistribute   | barrel | doublebarrelled |
| check      | doublecheck    | edged  | doubleedged     |

#### Otros prefijos: formación de verbos (en-)

|       |         |      |        |
|-------|---------|------|--------|
| large | enlarge | code | encode |
|-------|---------|------|--------|

#### Reducing Wear in Abrasive Conditions

Abrasion is the removal of material from a surface by the movement of material across its surface. The factors affecting abrasive wear are the surface properties of the item being worn away, the abrasive properties of the material moving across the surface and the characteristics of motion. Where abrasive wear is a problem it becomes necessary to understand the mechanism of attrition.

#### VOZ PASIVA

|                                |                                      |                              |
|--------------------------------|--------------------------------------|------------------------------|
| <b>is/ am /are</b> made        | es/soy/son hechos                    | se hace/n                    |
| <b>was/were</b> made           | era/ eran hechos – fue/fueron hechos | se hacía/ n – se hizo        |
| <b>will/ shall be</b> made     | será hecho                           | se hará                      |
| <b>would be</b> made           | sería hecho                          | se haría                     |
| <b>is/am/are being</b> made    | está siendo hecho                    | se está haciendo             |
| <b>was/were being</b> made     | estaba/estuvo siendo hecho           | se estaba/estuvo haciendo    |
| <b>have/has been</b> made      | ha sido hecho                        | se ha hecho                  |
| <b>had been</b> made           | había sido hecho                     | se había hecho               |
| <b>will have been</b> made     | habrá sido hecho                     | se habrá hecho               |
| <b>can be</b> made             | puede ser hecho                      | se puede hacer               |
| <b>can't have been</b> made    | no puede haber sido hecho            | no se puede haber hecho      |
| <b>could be</b> made           | podría/podía ser hecho               | se podría/pudo hacer         |
| <b>could have been</b> made    | podría haber sido hecho              | se podría haber hecho        |
| <b>may be</b> made             | puede ser hecho                      | se puede hacer               |
| <b>may have been</b> made      | puede haber sido hecho               | se puede haber hecho         |
| <b>might be</b> made           | podría/podía ser hecho               | se podría/podía hacer        |
| <b>might have been</b> made    | podría haber sido hecho              | se podría haber hecho        |
| <b>should be</b> made          | debería/debe ser hecho               | se debería/debe hacer        |
| <b>should have been</b> made   | debería/debió haber sido hecho       | se debería/debió haber hecho |
| <b>must be</b> made            | debe ser hecho                       | se debe hacer                |
| <b>must have been</b> made     | debe haber sido hecho                | se debe haber hecho          |
| <b>ought to be</b> made        | deber ser hecho                      | se debe hacer                |
| <b>ought to have been</b> made | debió haber sido hecho               | se debió haber hecho         |

Once the electric drive had been selected, the results of battery tests performed by the battery team were evaluated to determine the proper battery technology, and the resulting geometry and weight distribution of the battery packs. With the preferred battery technology identified (see Figure 1.7), energy criteria were included in the simulation, and lap times and energy consumption were predicted. Finally, appropriate instrumentation was designed to permit monitoring of the most important functions in the vehicle.

### **Mechatronic Systems—Design of an Electric Race Car**

For oil, a long, steel tank, called a separator, is used to separate natural gas and salt water from the oil. The oil is then stored in steel stock tanks.

Production from wells can be increased by acid and frac jobs. Acid is pumped down a well to dissolve some of the reservoir rock adjacent to the wellbore during an acid job. During a frac job, the reservoir rock is hydraulically fractured with a liquid pumped under high pressure down the well. Periodically, production from the well must be interrupted for repairs or remedial work during a workover.

After the natural reservoir drive has been depleted in an oilfield, waterflood, and enhanced oil recovery can be attempted to produce some of the remaining oil. During a waterflood, water is pumped under pressure down injection wells into the depleted reservoir to force some of the remaining oil through the reservoir toward producing wells (Fig. I-12). Enhanced oil recovery involves pumping fluids that are not natural to the reservoir, such as carbon dioxide or steam, down injections wells to obtain more production.

Nontechnical Guide to Petroleum Geology,  
Exploration, Drilling, and Production

Several steps can be taken to prevent and/or control crevice corrosion:

1. Proper design, avoiding crevices, will control crevice corrosion. If lap joints are used, the crevices caused by such joints should be closed by either welding or caulking. Welded butt joints are preferable to bolted or riveted joints.
2. Porous gaskets should be avoided. Use an impervious gasket material. During long shutdown periods, wet packing materials should be removed.
3. The use of alloys resistant to crevice corrosion should be considered. The resistance of stainless steels to crevice corrosion can be improved by increasing the chromium, nickel, molybdenum, and nitrogen content. For example, type 316 stainless steel containing 2–3% molybdenum is fairly resistant, whereas nickel alloys are more resistant than stainless steels.
4. Reduction of crevice corrosion can be accomplished, when possible, by reducing the temperature, decreasing the chloride content, or decreasing the acidity.
5. The gaps along the periphery of tanks mounted on a masonry platform should be closed with tar or bitumen to avoid seepage of rainwater. Vessels and tanks should be designed to provide complete drainage, thereby preventing the buildup of solid deposits on the bottom.
6. Regular inspections and removal of deposits should be scheduled.

## VOZ PASIVA ESPECIAL

Se llama voz pasiva especial a la **construcción pasiva** (Be + participio pasado) seguido de un **infinitivo** (to + verbo; to+have+participio pasado – infinitivo perfecto o to+have been + participio pasado- infinitivo perfecto pasivo)

El grupo verbal extendido se puede dividir en dos partes, la parte en voz pasiva y la parte que contiene el infinitivo.

**El verbo principal de la parte en voz pasiva** generalmente representa un proceso mental o verbal (verbo de pensamiento o habla) relacionado con el descubrimiento, experimentación o comprobación de un fenómeno, por eso, para traducir estas oraciones al castellano, partimos desde ese verbo, usando la forma “**Se**”, por ejemplo, Se piensa **que...** se supo **que...** se comprobará **que...**

Luego se traduce **el sujeto** de la oración, que representa el foco de la comprobación o experimentación o descubrimiento.

**El verbo en infinitivo** tiene que ver con aquello que se ha descubierto, visto, o experimentado o demostrado. Este verbo corresponde al sujeto de la oración. El tiempo verbal en castellano se decidirá según el contexto.

-All living organisms are known to consist of cells.

2 / Se + 1 + que / 3 / 4

-Se sabe que todos los organismos vivientes consisten de células.

Se + 1 + que / 2 / 3 / 4

All living organisms are known to consist of cells.

were known to consist will

be known to consist had

been known to consist

could be known to consist

must be known to consist

**Ejemplos de verbos de pensamiento o habla en infinitivo y en participio:**

|           |             |           |              |
|-----------|-------------|-----------|--------------|
| announce  | announced   | Know      | known        |
| Believe   | believed    | Nominate  | nominated    |
| Consider  | Considered  | Pronounce | Pronounced   |
| Establish | established | Proyect   | referred     |
|           |             | Refer     | projected    |
| Estimate  | estimated   | Suppose   | supposed     |
| expect    | expected    | Show      | Shown/showed |
| Find      | Found       | Say       | said         |

1. Water **is said to boil** at 212 degrees Fahrenheit.

2. Two or more circuit elements are said to be **in series** if the identical current flows through each of the elements.

3. The voltage divider network of Figure P2.26 is expected to provide 2.5 V at the output.
4. Sometimes programmers use a suffix letter *b* for binary numbers, *o* for octal, *h* for hexadecimal, and *t* or *d* for tens for decimal. Other times you are simply expected to know from context the number base that is being used.
5. Modern PCs are expected to spot any new hardware and adapt themselves to it.
6. The true value of the response was known to be constant.

***Traducir los siguientes titulares de artículos periodísticos***

- Vast petroleum reserves are thought to be under the Arctic
- WARMING IS FOUND TO DISRUPT SPECIES
- Dirty Smoke From Ships had been Found To Degrade Air Quality In Coastal Cities
- Michigan laser beam is believed to have set record for intensity
- UPS is said to be in talks to buy a Dutch rival, TNT.
- Disclosures Are Found to Change Financial Behavior
- Diesel fumes are found to cause cancer, N.J. residents at high risk
- Many related organisms are found to have the same enzymes and hormones
- Babies raised among dogs are found to be healthier study says
- The earliest inhabitants of North America were thought to have come across a bridge of land thousands of years ago from what continent?
- Immigrants will be expected to speak English and champion British culture
- Some of the oldest rocks ever found have been estimated to be about 3.9 billion years old

## ORACIONES CONDICIONALES

### TIPO I (condicionales reales – presente y futuro)

Son oraciones donde se expresa la **posibilidad cierta** de que algo suceda si se da o se cumple la condición expresada. O sea que la oración consta de dos partes: Una condición que expresa una situación posible, y una predicción o resultado, también posible.

- **La condición** se expresa en algún tiempo presente (simple, continuo, perfecto, o modal) y va precedida por el conector **IF (Si...)**.
- **El resultado o predicción** se expresa generalmente en algún tiempo futuro. También se puede usar un tiempo presente (condicional tipo O) o imperativos o modales (tipo Mixto)

**If you know the temperature, you will calculate the results.**

, you calculate  
, you can calculate  
, you will be able to  
, calculate

1. **If** they do not trust the government, they may be afraid to invest their capital in the country.
2. **If** they are not properly lubricated, metal parts have to be replaced.
3. **If** the mechanism is operating improperly, you must report this to the supervisor.
4. If the motor can't be spared from service, the cleaning operation will have to be made "in situ"

### TIPO II (condicionales hipotéticas – presente y futuro)

Son oraciones donde se expresa una posibilidad remota de que algo sucediera si se cumpliera la condición expresada. La condición no es una situación real sino hipotética. En muchos casos la frase continúa con un "pero..." seguido de la situación real, que se contrapone a la hipotética.

- **La condición** se expresa en pasado simple ( para indicar distanciamiento de lo real) y se traduce como subjuntivo pasado en español: -ara, -iera, -ase, -iese. **Si bien el verbo está en pasado, la referencia temporal es presente: situación hipotética presente.**
- **El resultado** se expresa generalmente en condicional con el auxiliar **would** o modales condicionales **should, might, could**, (para indicar alejamiento de un resultado real).

**If we knew the temperature, we would calculate the results. But ...**  
could calculate might calculate  
would be able to calculate would  
have to calculate

5. ... nuclear energy is very polluting and dangerous. **If** there was a slight error, it would lead to tremendous damage to the environment and destruction of human life.
6. **If** a crack were found, the material should be checked.

### TIPO III (condicionales hipotéticas en pasado)

Son oraciones donde se expresa la posibilidad de que algo habría sucedido en el pasado si se hubiesen dado, o se hubiesen cumplido ciertas condiciones, que en la realidad no se cumplieron.

- **La condición** se expresa en pasado perfecto, para indicar distanciamiento de la realidad y referencia al pasado, y se traduce en subjuntivo pluscuamperfecto (hubiera/hubiese)
- **El resultado** se expresa en condicional perfecto, para indicar aquello que habría sucedido si la condición se hubiese dado.

*If we had known the temperature, we would have calculated the results. But ...  
could have calculated might have calculated  
might have been able to calculate would have had to calculate*

7. Expansion of the use of computer technology throughout the country would certainly not have reached its current proportions **if** Hong Kong had not developed its own facilities...
8. If the atom had had a net positive charge, it would have been ionized.
9. The equipment would have lasted longer, if the maintenance had been more efficient.
10. The results would not have been uncertain if the specified instructions had been followed.

### Automotive Power

#### A Case Study in Energy Relations

The power requirements of a gasoline-powered automobile are an important and practical example of the concepts in Chapter 6. **If** roads **were** flat and frictionless and air resistance **didn't exist**, there **would be** no need for an automobile to have an engine. All you'd **need** to go for a drive **would be** a few strong friends to give you a push to get started and a few other friends at your destination to stop you.

(Steering on frictionless roads **would be** a problem, though.)

In the real world, however, **if** a moving car **doesn't have** an engine, it **slows** down because of forces that resist its motion. The engine's function is to continuously provide power to overcome this resistance. So, **if** we **want to understand** how much power is required from a car's engine, we **must analyze** the forces that act on the car.

Two forces oppose the motion of an automobile: rolling friction and air resistance...

**If** the temperature **is** too high or too low, the operating time of the battery **will become** shorter. **If** you drop the battery accidentally, **check** to see if the body of the battery and the terminals are damaged.

### C. PRODUCING OIL AND GAS

If it appears that a well has located commercial quantities of oil or gas, the drilling crew places a continuous *string* of production-casing pipe (thirty-foot lengths screwed together) in the hole.

Oil and Gas Law in a Nutshell, 5th Edition by John S. Lowe

If the natural pressure within the rocks is high, the pressure will force oil to flow to the surface. If the pressure is low, the well owner will install pumping equipment to lift the oil to the surface; generally the familiar “horsehead” pumping jack is required. Gas will normally flow, controlled by a system of valves and gauges at the top of the well called a “Christmas tree.”

### CONDICIONALES ESPECIALES

Llamamos **condicionales especiales** a todas aquellas oraciones donde, si bien aparecen las funciones de **condición y resultado** similares a las ya estudiadas en **condicionales tipos I, II y III**, se diferencian de aquellas ya sea por utilizar una palabra introductoria de la condición que **no es “if”**, o por tener una estructura diferenciada en cuanto al orden en el que aparecen las palabras (**inversión verbo+ sujeto**)

| conectores distintos de “if”                        |                                               |
|-----------------------------------------------------|-----------------------------------------------|
| as long as                                          | si, mientras, siempre que                     |
| but for                                             | si no fuera por, si no hubiese sido por       |
| in case                                             | en caso de que                                |
| in the event                                        | en caso de que                                |
| only if                                             | si, sólo si                                   |
| unless                                              | a menos que                                   |
| provided (conector en posición inicial)             | si, siempre que                               |
| providing (conector en posición inicial)            | si, siempre que                               |
| since                                               | puesto que, dado que,                         |
| suppose/supposing                                   | suponiendo que , supongamos que               |
| whether                                             | si, ya sea                                    |
| inversión                                           |                                               |
| should                                              | si, en caso de, si acaso, si llegara/n a (II) |
| were + inversión + to infinitive (posición inicial) | si + subjuntivo (tipo II)                     |
| had + inversión (posición inicial)                  | si (tipo III)                                 |

|                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Whether</b> (= if) - <b>Si</b><br><br><b>Whether or not</b> - <b>si...o ...no ya sea que...o...no</b>                                                                                                                                                                                                                                            | <p>I don't know <b>whether</b> the configuration was applied properly.</p> <p><b>Whether or not</b> this configuration is applied properly, it will work.</p> <p><b>Whether</b> this configuration is applied properly <b>or not</b>, it will work.</p>              |
| <b>Unless</b> - <b>A menos que</b><br><b>= if not</b><br>(Nexo con significado negativo)                                                                                                                                                                                                                                                            | <p>Unless this configuration is applied properly, it won't work.</p>                                                                                                                                                                                                 |
| <b>Even if</b> - <b>Aún cuando</b><br><b>Incluso si</b><br><b>Aunque</b><br>(Nexo cuyo resultado no se basa en la condición)                                                                                                                                                                                                                        | <p>Even if this configuration is applied properly, it won't work.</p>                                                                                                                                                                                                |
| <ul style="list-style-type: none"> <li>• <b>Only if</b> - <b>Sólo si</b></li> <li>• <b>As long as</b> - <b>Siempre que</b></li> <li>• <b>Provided (that)</b> - <b>Siempre que</b></li> <li>• <b>Providing (that)</b> – <b>Siempre que</b></li> <li>• <b>On the condition that</b> – A condición de que</li> </ul> (Nexos de condiciones necesarias) | <p>Only if / as long as/ Provided that/ Providing that/ On the condition that /this configuration is applied properly, it will work.</p>                                                                                                                             |
| <ul style="list-style-type: none"> <li>• <b>But for + noun</b> - <b>de no ser por si no hubiera sido por...</b></li> </ul> (Nexo negativo de condición necesaria )                                                                                                                                                                                  | <p>But for the use of this configuration, the system would have never worked.</p>                                                                                                                                                                                    |
| <b>In case (that)</b> - <b>en caso de que, por si</b><br><b>Assuming (that)</b> suponiendo que <b>Supposing (that)</b> - suponiendo que<br><br>(Nexos de condiciones imaginarias)                                                                                                                                                                   | <p>Assuming that the configuration is applied properly, it will work.</p>                                                                                                                                                                                            |
| <b>As if</b> - <b>Como si</b><br><br>(Nexo de condición hipotética)                                                                                                                                                                                                                                                                                 | <p>Let's continue <b>as if</b> the configuration had been applied properly.</p>                                                                                                                                                                                      |
| Con Inversión:                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                      |
| <b>Condición sin nexo y con inversión SHOULD</b><br><br>(si, en caso de que)                                                                                                                                                                                                                                                                        | <p>Should the product be defective, you may contact our helpdesk.</p> <p><b>If</b> the product <b>is</b> defective, you...</p> <p><b>If</b> the product <b>were</b> defective...</p>                                                                                 |
| <b>Condición sin nexo y con inversión WERE</b><br>(oración hipotética - presente)                                                                                                                                                                                                                                                                   | <p>Were the product defective, you may contact our helpdesk.</p> <p>If the product were defective, you...</p>                                                                                                                                                        |
| <b>Condición sin nexo y con inversión HAD</b> (oración hipotética – pasado)                                                                                                                                                                                                                                                                         | <p>Had the product been defective, you might have contacted our helpdesk, but ...</p> <p>If the product had been defective, you might have contacted our helpdesk, but...</p> <p>Hadn't the product been defective, you might have never contacted our helpdesk.</p> |

## Your Philips Warranty

**In case** your Philip product is not working correctly, please contact first our helpdesk to assist you. **If** the helpdesk concludes with you that the product is defective, contact your Philip Dealer where you bought the product.

**In the event** you require service while in another country, or you cannot contact the dealer where you bought the product, contact our helpdesk for support to solve the problem.

**Should** you come across any more difficulty during installation or use, before you contact Philip technical support, please prepare the following information so that we could solve your problem more quickly.

1. **Had** businesses not deployed mobile applications, they would have never gained competitive advantage.
2. **Providing** the devices have an easy-to-use interface, the use of the different applications will be successful.
3. **Were** the engineers to design a complete usability test, they would have to foresee all the possible situations of the applications use.
4. Finally, we should remark that two complex numbers are equal **if and only if** the real parts are equal and the imaginary parts are equal. This is equivalent to stating that two complex numbers are equal **only if** their magnitudes are equal and their arguments are equal.
5. Definition: The Norton equivalent current is equal to the short-circuit current that would flow **were** the load replaced by a short circuit.
6. **Since** these three subcircuits are in parallel, the same voltage will appear across each of them.
7. Note that this method is also useful for circuits containing a larger number of elements, **provided that** we can represent these circuits by their equivalents, with the diode appearing as the load.
8. The buzzer also sounds **when** the key is not turned but the lights are on. In addition, the car will not start **unless** the key is in the ignition, the car is in park, and all doors are closed and seat belts fastened. Design a logic circuit that takes all of the inputs listed and sounds the buzzer and starts the car **when** appropriate.
9. It is virtually impossible to specify what the best motor would be, **unless** the application and its environment are clearly specified.
10. **Unless** otherwise specified, the fermentation medium consisted of (I-1): 12 g sucrose, 0.1 g KH<sub>2</sub>PO<sub>4</sub>, 0.5 ml corn steep liquor (nitrogen content 47 mg ml<sup>-1</sup>), 0.5 g urea, 0.1 g NaCl and 0.2 g MgSO<sub>4</sub>·7H<sub>2</sub>O. The initial pH of all media was adjusted to 7.8.
11. **Since** the actuator rotates the valve diverter which redirects the flow of water, it is imperative that the seals and the O-rings within the valve body be lubricated often (at least every *three (3) months*).
12. Check **whether** the load is within the permitted range.
13. This procedure allows for a safety factor should the mud density increase slightly.

## TRADUCCIONES CON “SE”

### 1. Pasivas con “se” (pasiva común sin “by”)

1. A similar molding made of untreated material should be used.

### 2. Pasiva con “se” al final de una oración

2. Several methods of determining moisture content have been developed.
3. By choosing your operating time with care, even greater distances can be reached.
4. In that case, special materials that have little or no change in resistance over a wide temperature range are used.

### 3. Pasivas especiales (pasiva + to infinitive)

5. These effects were supposed to have appeared previously.
6. Conductors are said to offer a low resistance to the flow of current.
7. This phenomenon was found to occur in ferrous metals.
8. The sun and moon were believed to move in circles.
9. As fluid approaches the pump suction, it is assumed to have very little to no rotational velocity. Note: Prerotation of fluid in suction piping can and often does exist, but will be disregarded in this discussion.

### 4. Voz pasiva con elipsis e -ing con elipsis.

10. **When getting ready** to leave, the firemen were called for an emergency.
11. **When used** in construction, these materials provide elasticity to the building.
12. This is the eclipse **as observed** just before the beginning of the annular phase.
13. In his investigations **already mentioned** on the consistency of the quantum theoretical methods, Heisenberg has given this relation.
14. Besides the formula **already mentioned** for benzene, several others have been proposed.
15. **As shown** in Fig. 1, the process can be repeated and a further section of the same group of cells obtained.
16. The lowest resistance observed was '420 **when working** through 10 ohms.
17. **If working** under standard conditions **one** might expect standard results.

### 5. Pasivas con sujeto consciente o animado

18. **A hundred and thirty two scientists were given** grants enabling them to attend twenty-nine different international scientific meetings and also, during the course of the project, **more than a hundred developing country scientists were given** advanced training.
19. **Washington Programme officers at the US National Science Foundation (NSF) have been told** to stop using their influence with principal investigators to negotiate down the size of research grants.

### 6. Frases verbales pasivas con significado específico:

|                    |                 |                   |                   |
|--------------------|-----------------|-------------------|-------------------|
| make use of        | Usar/aprovechar | be made use of    | hacerse uso de    |
| make allowance for | tener en cuenta | be made allowance | tenerse en cuenta |

|                 |                      |                         |                                                                     |
|-----------------|----------------------|-------------------------|---------------------------------------------------------------------|
| account for     | explicar             | be accounted for        | explicarse                                                          |
| take care of    | tener cuidado/cuidar | care should be taken    | debe cuidarse que/ +<br>debe tenerse cuidado de<br>que + subjuntivo |
| take account of | tener en cuenta      | account should be taken | debe tenerse en cuenta                                              |

20. This important fact **was made use of** in the operation of the mechanisms.
21. **Care should be taken** that the temperature does not exceed 80°C.
22. **Allowance must be made** for the possibilities of heavy peak loads.
23. **No allowance** has been made for age, differences in diameter, or any abnormal condition of interior surface.
24. Considering first the chemistry involved, **account must be taken of** the effects of the reactants on the metal.
25. The useful work of the unit **is accounted for** by displacement of the oil.
26. Some machines have adjustable angle drive systems that can be changed **to account for** various process conditions.
27. No information has been published that **accounts for** all variables.
28. The problem with this equation is that it fails **to account for** other rheological variables.
29. All practical formulae for the flow of fluids are derived from Bernoulli's theorem, with modifications from empirical studies **to account for** losses due to friction.

#### **7. Verbos intransitivos y transitivos sin objeto directo que deben traducirse con "se"**

30. The sun and moon both **rise** in the east and **set** in the west.
31. The more heat, the faster ice **melts**.
32. Which frozen liquid **melts** the fastest?
33. Most structural alloys **corrode** merely from exposure to moisture in the air.
34. Zinc **dissolves** in salt water.
35. A suspension is different from a solution. The solid particles **have not dissolved** but are suspended in the liquid.
36. A solid **dissolves** in a liquid when it **mixes** completely with the liquid.
37. If a substance is soluble in water, then we can show it **dissolving**.
38. You see streamers of color **precipitate** downward through the water.
39. Why does stainless steel **corrode**?
40. These substances **separate** when dissolved in water.

#### **8. Acciones reflejas (-self /-selves) y recíprocas (each other, one another) y "together"**

41. Any two bar magnets placed near each other will try to **align themselves** head-to-tail.
42. These programs **protect each other** from viruses.
43. These programs **protect one another** from viruses.
44. Like poles **repel each other**.
45. This article is about the alteration of the note of railway whistles in trains **meeting each other**.
46. All developing countries have no option but to increase their investment in science if they want **to lift themselves** above the pile of underdeveloped nations.
47. Many mathematicians **feel themselves** perceived as unable to conduct the simplest practical task, unfashionably attired, nerdy and isolated from the world.

48. The article explains how plants **maintain themselves** in the struggle for existence.
49. We propose a way to stimulate the Earth's capacity **to cure itself**, as an emergency treatment for the pathology of global warming.
50. The land **exhausts itself** very rapidly after growing soya bean two running years.
51. New techniques from molecular neuroscience are beginning to give us a glimpse of how the visual system **is put together**.
52. A warehouse is a central database where data from many different sources are **brought together** on one physical site.
53. The lines are coated and insulated from **each other**.
54. You cannot solder nichrome wires to each other or to other types of wire.

#### 9. Verbs become - get - go - grow y make+objeto - seguidos de participio pasado o adjetivo

Cuando estos verbos van seguidos del **participio pasado** de otro verbo, o **de un adjetivo**, son indicaciones de un proceso de transformación, y deben traducirse como **volverse** aquello que se indica en el adjetivo o participio, o, si fuera posible, debe transformarse el adjetivo o participio en verbo y traducirse con "se". Cuando el verbo **make** va seguido de un adjetivo, o de un objeto directo más adjetivo, sigue el mismo patrón y se traduce como **volver**, pero **sin** la partícula **se**.

55. A significant fraction of the hormone molecules that **bind** to cells **become linked** to their receptors.
56. The difficulties with corrosion **become greater** as the temperature is raised.
57. Questions about the nature of the new coronavirus will be answered within days, when virologists **get hold** of the complete genetic sequence now being generated at the CDC.
58. The response to the second stimulus could **get larger or smaller** than to the first depending on the device.
59. The engineers **got interested** in how to handle this new device.
60. This well-produced book is a 'must buy' for anyone wanting to **get started** in this field.
61. Too much silicon makes the core brittle and difficult to machine into the desired shape.
62. Highly inhibitive WBMs, such as PHPA/glycol in a 20 to 25%msolution of NaCl, can remove water from the cuttings, but the cuttings may actually **get stickier**, depending on how wet they were when generated.
63. The usual procedure is to start with coarser-mesh screens in the fast drilling, larger holes near the top of the well and to "screen down" to finer screens as the well **gets deeper**. Finer screens can be used when the drilling rate decreases.
64. As holes **get larger and deeper**, the surges **become larger and more violent**.
65. Other natural environments may **make burial difficult or impossible**.
66. The net cost of improper care will probably **make the decision very costly**.

#### 10. Usos impersonales de YOU y ONE

67. **One** can anticipate the content of the text by reading its title.
68. **One** may ask why this technique has been adopted so late.
69. **You** must be careful when working with statistics.

#### 5.4 Assembly of Valve

Before proceeding with the mounting of a valve onto an actuator **make sure** that the actuator operates in the desired direction of rotation and both actuator / valve are correctly orientated. **Important: When using** a spring return actuator for a fail safe operation, ensure that when air or electricity failure occur the direction of rotation is correct for your application.

\_ Fit the valve (5) onto the actuator (3). **Ensure that** the actuator is in normal position (closed position).

## ELLIPSIS

Se llama elipsis a la eliminación o elisión de algunos elementos de la oración cuando están sobreentendidos. Deben tenerse en cuenta los elementos elididos para hacer la traducción.

Por lo general lo que se elimina es :

- **el verbo to be** como parte de tiempos continuos y perfectos, en oraciones en voz activa y pasiva. (en estos casos lo que permanece en la oración es el verbo principal con –ing, o el participio pasado. Decidir el tiempo verbal según el contexto)
- **el sujeto** (recordar que el pronombre eliminado siempre es igual al de la oración en la que se ha producida la elipsis, o la más cercana a ella)
- **los pronombres relativos** : which, who, that, where (traducir según el contexto) ○ Se puede encontrar el conector (**if, as, when, while, though, unless, whether, etc,**) seguido de la forma **–ing o del participio pasado**, habiéndose omitido el sujeto y el verbo to be (it is, it was, they are, they were )
- **Importante:** se traduce con **se** en los casos en que la traducción de la construcción elidida hubiese demandado **se**, por ejemplo:

- **A-** la estructura elidida ha sido parte de una construcción pasiva: as **(it was) mentioned** before → como **se mencionó**

- **B-** la estructura elidida contenía una forma impersonal **you/one**: **When (you are) dealing** with this problem, you can follow two paths. → Cuando se lidia con este problema, se pueden...

**Si la estructura original no demandaba traducción con “se”, se debe imaginar qué traducción hubiese tenido la construcción de no haber sido elidida:**

**When (he is) working** under pressure, an engineer must always... → **Cuando trabaja** bajo presión, un ingeniero debe siempre...

Ejemplos de casos de expresiones elípticas:

|                |                                             |
|----------------|---------------------------------------------|
| If necessary   | While working                               |
| If possible    | Done, work will go on...                    |
| As indicated   | Unless otherwise said...                    |
| As above shown | Once obtained...                            |
| As said        | After tested, the results...                |
| As stated      | Regarding the results... Related to this... |

**While testing** the inflammable properties of the explosive mixture of air and coal-gas **proceeding** from the mouth of an unlighted Bunsen-burner, and **observing** its flame kindle and flashing back along a glass tube, it occurred to one of the students and to the chemical demonstrator, Mr. Haigh, to check the flame in its descent by inserting a piece of wire-gauze in the tube. **On reaching** the wire-gauze the flame rested there, **as expected**.

1. It should be remembered that we are not able to determine the lines very accurately, there being a possible error of 0.005, **as previously stated**.

2. Impressive solar-to-electrical energy conversion efficiencies have been achieved with such films **when used** in conjunction with liquid electrolytes.
3. In fact, **as first indicated**, the so-called 'high-velocity' stars which describe highly elongated elliptic trajectories around the galactic centre seem to possess rather different physical characteristics **as compared with** the 'ordinary' stars predominating in the neighbourhood of our sun and moving along regular, almost circular, orbits.
4. The nature of the X-rays was finally determined **when, aided** by Planck's theory of radiation, Prof, von Laue was able to show that X-rays could be diffracted.
5. To determine the forces that may be released in earthquakes is a complicated process, even **when aided** by satellites of the Global Positioning System.
6. The main advantage of land application is that, **if done** right, the waste is incorporated into the land and the land can be returned to its original status (e.g., for growing crops).
7. '**When in doubt**, leave out'

#### VERBO CON PREPOSICIÓN, ADVERBIO o ADJETIVO

|                |                       |               |                         |
|----------------|-----------------------|---------------|-------------------------|
| Abrade         | Raer, raspar          | call at       | ir a, parar en          |
| Apply          | Aplicar-aplicarse     | call away/off | cancelar,ordenar        |
| Attract        | Atraer                | call back     | revocar                 |
| be back        | estar de vuelta       | call for      | necesitar, demandar     |
| be down        | estar escrito         | call forth    | hacer salir, sacar      |
| be in for      | estar expuesto a      | call in       | pedir, llamar           |
| be off         | estar apagado, salir  | call on       | visitar                 |
| be out         | no ser considerado    | call out      | gritar                  |
| be out of sth  | no tener más          | call up       | citar, convocar         |
| be over        | terminar              | carry away    | llevarse                |
| be up          | estar levantado       | carry back    | devolver                |
| be up to       | estar dispuesto a     | carry off     | alzar, retirar          |
| Bend           | Doblar, torcer        | carry on      | proseguir               |
| Blow           | Soplar                | carry out     | ejecutar, llevar a cabo |
| Boil           | Hervir                | carry over    | pasar a otra página     |
| Bore           | Perforar              | carry through | llevar a cabo,          |
| break away     | soltarse, escapar     | Cast          | Vaciar, moldear         |
| break down     | romperse, averiarse   | Connect       | Conectar                |
| break from     | desprenderse          | Cool off      | Enfriar                 |
| break in       | forzar, intervenir    | come about    | ocurrir, efectuarse     |
| break off      | separar, cortar,cesar | come along    | caminar, venir          |
| break out      | escapar, comenzar     | come back     | volver                  |
| break thorough | superar, atravesar    | come by       | pasar por               |
| Break out      | Desenroscar           | come down     | bajar, descender        |
| Break up       | Desmenuzar,terminar   | come for      | venir a buscar          |
| Brick up       | Enladrillar           | come from     | proceder, provenir      |
| bring about    | efectuar              | come in       | entrar                  |

|                  |                       |           |                       |
|------------------|-----------------------|-----------|-----------------------|
| bring away       | llevarse algo         | come near | acercarse             |
| bring back       | devolver              | come on   | avanzar               |
| bring close/near | acercar               | come out  | publicar              |
| bring down       | bajar                 | come over | venir, cruzar         |
| bring forth      | producir              | Cut       | Cortar, labrar        |
| bring in         | introducir            | cut away  | recortar              |
| bring off        | lograr, llevar a cabo | Cut down  | Rebajar, reducir      |
| bring on         | llevar, acarrear      | Cut in    | Conectar, introducir  |
| bring out        | demostrar             | cut off   | quitar, amputar       |
| bring up         | educar, criar         | cut open  | abrir cortando        |
| bring over       | persuadir             | cut out   | eliminar, desconectar |
| Buck up          | Contrarremachar       | cut short | interrumpir           |
| Burn out         | Quemarse              | cut up    | cortar, despedazar    |

|              |                       |             |                      |
|--------------|-----------------------|-------------|----------------------|
| Deal         | Distribuir            | get up      | preparar, levantarse |
| Displace     | Desalojar             | get through | terminar             |
| Dissolve     | Disolver              | get to      | llegar a             |
| Do away with | Deshacerse de         |             |                      |
| do for       | servir, bastar para   | give back   | devolver             |
| do over      | hacer de nuevo        | give in     | rendirse             |
| do with      | poder con, arreglarse | give off    | echar, despedir      |
| do without   | arreglarse sin        | give out    | publicar, faltar     |
| Draw         | Tirar, sacar, dibujar | give over   | entregar, abandonar  |
| draw away    | quitar, llevarse      | give up     | renunciar            |
| draw back    | retroceder            | go across   | cruzar               |
| draw in      | atraer                | go against  | oponerse             |
| Draw off     | Decantar, sacar       | go along    | seguir               |
| draw out     | sacar                 | go back     | retroceder           |
| draw over    | persuadir             | go by       | pasar por alto       |
| draw up      | parar                 | go down     | bajar                |
| Dry up       | Secar, deshidratarse  |             |                      |
| Drill        | Taladrar              | go forward  | adelantar            |
| Drive        | Mover, accionar       | go in       | entrar               |
| Drive in     | Martillar             | go into     | participar           |
| Evaporate    | Evaporar              | go off      | explotar             |
| Experiment   | Experimentar          | go through  | discutir en detalle  |
| Fall         | caer                  | go to       | dirigirse a          |
| Fall back    | retroceder, retirarse | go up       | incrementar, subir   |
| fall down    | caerse                | Guild       | construir            |

|             |                   |              |                         |
|-------------|-------------------|--------------|-------------------------|
| fall in     | caer adentro      | hold         | sostener/sostenerse     |
| fall off    | disminuir, decaer | keep away    | mantener alejado        |
| fall out    | suceder           | keep back    | guardar                 |
| Fasten      | Asegurar, atar    | keep down    | decrecer,sujetar        |
| File        | Limar, registrar  | keep in      | mantener, sostener      |
| Filter      | Filtrar           | keep off     | no entrar, no tocar     |
| Fit         | Ajustar, proveer  | keep on      | continuar, seguir       |
| Fit out     | Equipar           | keep to      | adherirse               |
| Fit up      | Bulonar           | keep up      | mantenerse firme        |
| Flow        | Fluir             | keep up with | ir parejo,a igual ritmo |
| Flow back   | Refluir           | Knock down   | Desmontar, voltear      |
| Forge       | Forjar, fraguar   | Lay out      | Proyectar               |
| Frame       | Armar, componer   | let          | permitir                |
| get at      | llegar, alcanzar  | let down     | dejar caer              |
| get back    | recobrar          | let in       | dejar entrar            |
| get down    | descender         | Let in       | Empotrar                |
| get into/in | entrar            | let off      | explotar, dejar ir      |
| get off     | salir, sacar      | let on       | revelar un secreto      |
| get on      | progresar         | let up       | relajarse, disminuir    |
| get out     | desaparecer       | Light        | Quitar la presión       |
| get out of  | salir de, evitar  | Line in      | Alinear                 |

|              |                       |              |                           |
|--------------|-----------------------|--------------|---------------------------|
| get over     | recuperarse           | look after   | cuidar                    |
| look at      | mirar                 | stand back   | retroceder                |
| look for     | buscar                | stand by     | estar inactivo, listo     |
| look forward | prever, esperar       | stand for    | representar,              |
| look like    | parecerse             | stand forth  | adelantarse               |
| look on      | considerar            | stand off    | mantenerse a distancia    |
| look out     | cuidarse              | stand out    | mantenerse firme,destacar |
| look to      | atender a,            | stand to     | no abandonar, seguir      |
| look through | examinar              | stand up     | levantarse                |
| look up      | averiguar, consultar  | stand up for | enfrentar                 |
| look upon    | considerar            | Take apart   | Desarmar (una máq)        |
| make again   | rehacer               | take away    | quitar, sacar, llevarse   |
| make of      | deducir               | take back    | devolver, llevar a        |
| make off     | irse                  | take from    | restar, sustraer          |
| make out     | discernir             | take in      | engañar, dar ingreso      |
| make over    | transferir            | take off     | despegar, sacarse         |
| make up      | completar, inventar   | take on      | prometer, asumir,         |
| put away     | apartar, poner aparte | take out     | sacar, llevar, quitar     |
| put back     | guardar, atrasar      | take to      | comenzar a, dedicarse     |

|             |                        |              |                            |
|-------------|------------------------|--------------|----------------------------|
| put down    | bajar, reprimir        | take up      | levantar, admitir, ocupar  |
| put in      | introducir             | Temper       | Templar                    |
| put off     | posponer, diferir      | Test         | Probar, ensayar            |
| put out     | extinguir, despedir    | Thin out     | Entresacar, reducir        |
| put over    | dilatar, llevar a cabo | Throw out    | Desengranar                |
| put to      | agregar, añadir        | Top out      | Coronar, rematar           |
| put up      | poner en su lugar      | Trim off     | Recortar                   |
| put up with | tolerar                | Trim up      | Adornar, componer          |
| run across  | atravesar, hallar      | Tune in      | sintonizar                 |
| run after   | buscar                 | turn away    | desviar, echar             |
| run down    | parar, extenuar        | turn back    | volver                     |
| run on      | continuar              | turn down    | declinar, rechazar, doblar |
| run out     | agotar, desperdiciar   | turn into    | convertir en, cambiar      |
| run out of  | quedarse sin algo      | turn off     | apagar                     |
| run over    | hojear, repasar        | turn on      | prender                    |
| run through | examinar               | turn out     | resultar                   |
| run up      | incurrir, sumar        | Turn over    | Volcar, transferir         |
| Saw         | Serrar, serruchar      | turn to      | comenzar, transformar      |
| Scrape off  | Quitar raspando        | Turn off     | Desconectar                |
| Screw down  | Atornillar             | Wrap up      | Arrollar, envolver         |
| Seat        | Ajustar (válv.)        | Wind off     | desenrollar                |
| Set up      | armar                  | Wind up      | Devanar                    |
| Sharpen     | Afilar, amolar         | Wreathe      | Enroscar                   |
| Shield      | proteger               | Wriggle out  | Deslizarse                 |
| Shut down   | Parar, cesar           | Wear away    | Consumirse                 |
| Shut off    | Cortar                 | Wear off/out | Gastarse, borrarse         |
| Slot        | Acanalar               | Wedge        | Acuñar, calzar             |
| Smooth      | Alisar, aplanar        | Weld         | Soldar, unir               |
| Spread out  | Extender distribuir    | Whitewash    | Blanquear                  |

1. Keep shale shakers well maintained, and never bypass them.
2. Install a removable screen over the suction to keep out large solids and trash.
3. The surface system needs to have the capability to keep up with the volume- building needs while drilling; otherwise, advanced planning and premixing of reserve mud should be considered
4. The main drawback has been the slow and tedious process to change requirements to keep up with technology.

5. If the rig cannot mix drilling fluid fast enough to keep up with these losses, reserve mud and or premixed drilling fluid should be available to blend into the active system to maintain the proper volume.
6. Screen blinding occurs when grains of solids being screened find a hole in the screen just large enough to get stuck in.
7. Now there is better control over what gets into the pit.
8. Suspended solids make up the wall cake; dissolved solids remain in the filtrate.
9. Agitation will also help in the removal of gas, if any is present, by moving the gaseous drilling fluid to the surface of the tank, providing an opportunity for the gas to break out.
10. All the wells were dried up by the long drought.
11. Well workers could not put up with salary cuts.
12. Storing operations are difficult to carry out if you cannot handle the machine.
13. They have developed a product to do away with rust.
14. After the oil overflows a weir or plate inside the tank, it is pumped away.
15. A pipe on the top carries the gas away.
16. With the pump shut down, remove the hopper and valve from the tee.
17. When the first mud cleaners were introduced into the field, they had to be shut off during weight-up.
18. Since fluid will naturally flow in the direction of least resistance, it will tend to flow back (recirculate) toward the suction inlet, where fluid entering the impeller is at a relatively low head.

## EL SUBJUNTIVO

- ☐ subjuntivo propiamente dicho
- ☐ en oraciones condicionales
- ☐ con “it” y “there” introductorios
- ☐ con verbos especiales
- ☐ en causativos
- ☐ en imperativos
- ☐ en pasivas especiales
- ☐ en cláusulas temporales
- ☐ en construcciones for+FN+to infinitivo

## Significado de los verbos en modo subjuntivo:

El hablante usa estas formas verbales para referirse a procesos o acciones que **no son reales** (no se pueden ubicar en la línea del tiempo -pasado, presente, futuro-) sino **virtuales y subjetivas**; que existen en su pensamiento a modo de:

## DESEO, DUDA, HIPÓTESIS, POSIBILIDAD, TEMOR, NECESIDAD, o CREENCIA

Desde el punto de vista sintáctico, el subjuntivo aparece en un verbo adjunto al verbo principal o a una frase principal cuando éstos expresan una acción dudosa, hipotética, posible, necesaria o deseada. (Por ejemplo en la oración *Espero que llegues a tiempo* el verbo *llegar* está en subjuntivo (*llegues*) y acompaña al verbo de la frase principal *esperar*, que está en modo indicativo, tiempo presente (*espero*)

### Subjuntivo en español:

|                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                               |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b><u>Presente</u></b><br/><b><u>Verbo AMAR</u></b></p> <p>que yo ame que tú<br/>ames / que vos<br/>ames que<br/>él ame<br/>que nosotros<br/>amemos que<br/>ustedes amen que<br/>vosotros améis<br/>que ellos amen</p>                                                                                      | <p><b><u>Verbo TEMER</u></b></p> <p>que yo tema que tú<br/>temas / que vos<br/>temas que él tema<br/>que nosotros<br/>temamos que<br/>ustedes teman que<br/>vosotros temáis que<br/>ellos teman</p>                                                                                      | <p><b><u>Verbo PARTIR</u></b></p> <p>que yo parta que tú<br/>partas/ que vos partas<br/>que él parta que<br/>nosotros partamos<br/>que ustedes partan<br/>que vosotros partáis<br/>que ellos partan</p>                                                                                                          | <p><b><u>Verbo SER</u></b></p> <p>que yo sea que tú<br/>seas / que vos seas<br/>que él sea que<br/>nosotros seamos<br/>que ustedes sean<br/>que vosotros seáis<br/>que ellos sean</p>                                                                         |
| <p><b><u>Imperfecto (pasado)</u></b><br/><b><u>Verbo AMAR</u></b></p> <p>que yo amara /amase<br/>que tú/ que vos<br/>amaras /amases<br/>que él amara/ amase<br/>que nosotros<br/>amáramos/amásemos<br/>que ustedes<br/>amaran/amasen<br/>que vosotros<br/>amarais/amaseis<br/>que ellos amaran<br/>/amasen</p> | <p><b><u>Verbo TEMER</u></b></p> <p>que yo temiera /temiese<br/>que tu temieras/<br/>temieses que él temiera<br/>/temiese que nosotros<br/>temiéramos/temiésemos<br/>que ustedes temieran o<br/>temiesen que vosotros<br/>temierais o temieseis<br/>que ellos temieran/<br/>temiesen</p> | <p><b><u>Verbo PARTIR</u></b></p> <p>que yo<br/>partiera/partiese que tú<br/>/ que vos<br/>partieras/partieses que<br/>él partiera/partiese que<br/>nos<br/>partiéramos/partiésemos<br/>que ustedes<br/>partieran/partiesen<br/>que vosotros<br/>partiérais/partiéseis<br/>que ellos<br/>partieran/partiesen</p> | <p><b><u>Verbo SER</u></b></p> <p>que yo<br/>fuera/fuese que<br/>tú/vos<br/>fueras/fueses que<br/>él fuera/ese que<br/>nosotros<br/>fuéramos/fuésemos<br/>s que ustedes<br/>fueran/fuesen que<br/>vosotros<br/>fuerais/fueren que<br/>ellos fueran/fuesen</p> |



|                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                            |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b><u>Tiempos compuestos:</u></b><br/><b><u>Perfecto de subjuntivo</u></b><br/><b><u>Verbo AMAR</u></b></p> <p>Que (aunque) yo haya amado<br/>hayas amado<br/>haya amado<br/>hayamos amado<br/>que ustedes hayan amado<br/>hayáis amado<br/>que ellos hayan amado</p>                    | <p><b><u>Verbo TEMER</u></b></p> <p>Que (aunque) yo haya temido<br/>hayas temido<br/>haya temido<br/>hayamos temido<br/>que ustedes hayan temido<br/>hayáis temido<br/>que ellos hayan temido</p>                                      | <p><b><u>Verbo PARTIR</u></b></p> <p>Que (aunque) yo haya partido<br/>hayas partido<br/>haya partido<br/>hayamos partido<br/>que ustedes hayan partido<br/>hayáis partido<br/>que ellos hayan partido</p>                                                  | <p><b><u>Verbo SER</u></b></p> <p>que (aunque) yo haya sido<br/>hayas sido<br/>haya sido<br/>hayamos sido<br/>que ustedes hayan sido</p> <p>hayáis sido<br/>que ellos hayan sido</p>                                       |
| <p><b><u>Pluscuamperfecto de subjuntivo</u></b><br/><b><u>Verbo AMAR</u></b></p> <p>que(aunque) yo hubiera/-ese amado<br/>hubieras/-eses amado<br/>hubiera/-ese amado<br/>hubiéramos/ésemos amado<br/>que ustedes hubieran/-sen amado<br/>hubierais/-seis amado<br/>hubieran/esen amado</p> | <p><b><u>Verbo TEMER</u></b></p> <p>Yo hubiera/ese temido</p> <p>hubieras/eses temido<br/>hubiera/ese temido<br/>hubiéramos/ésemos temido<br/>que ustedes hubieran/-sen temido<br/>hubierais/-seis temido<br/>hubieran/esen temido</p> | <p><b><u>Verbo PARTIR</u></b></p> <p>que(aunque) yo hubiera/-ese partido<br/>hubieras/-eses partido<br/>hubiera/-ese partido<br/>hubiéramos/ésemos partido<br/>que ustedes hubieran/-sen partido<br/>hubierais/-seis partido<br/>hubieran/esen partido</p> | <p><b><u>Verbo SER</u></b></p> <p>que yo hubiera/-ese sido<br/>hubieras/-eses sido<br/>hubiera/-ese sido<br/>hubiéramos/ésemos sido<br/>que ustedes hubieran/-sen sido<br/>hubierais/-seis sido<br/>hubieran/esen sido</p> |

**1. Frases hechas con expresión de deseo (Forma básica del verbo)**

"God **save** the Queen" "Heaven **forbid**" "Long **live** the king"

"God **bless** you my son"

"If he wants to waste his money on that, then so **be** it!"

**2. Expresiones de deseo con "wish" (+pasado o condicional)**

1. I wish she **were** an expert on the subject.
2. I wish you **were** here.
3. He wishes the product **were** cheaper.
4. I wish it **wasn't raining**.
5. I wish I **didn't have to** go to work tomorrow
6. I just wish those people **would go** somewhere else.

**3. Oraciones con verbos de pensamiento o de habla que a su vez proyectan una cláusula que requiere "que" en castellano.**

**procesos mentales:**

- **de conocimiento** como *know* (saber) *think* (pensar), *understand* (entender) *believe* (creer) *doubt* (dudar) *remember* (recordar) *forget* (olvidar), *wonder* (preguntarse)
- **de volición** como *want* (querer) *need* (necesitar) *intend* (tener la intención de) *desire* (desear) *hope* (esperar) *wish* (desear), *would like* (desear) *realize* (darse cuenta)
- **de percepción** como *see* (ver) *hear* (oir) *notice* (percibir, notar) *feel* (sentir) *taste* (percibir el sabor) *smell* (percibir el olor) Cuando estos verbos son negativos, van seguidos de subjuntivo.
- **de afecto** como *like* (gustar), *love* (amar) *admire* (admirar) *miss* (extrañar) *fear* (temer) *hate* (odiar) *appreciate* (apreciar) *prefer* (preferir) *annoy* (molestar) *puzzle* (desconcertar)

**procesos verbales (de decir)**

- *say* (decir) *tell* (contar) *ask* (preguntar, pedir) *request* (pedir, solicitar) *reply* (responder) *suggest* (sugerir) *warn* (advertir) *explain* (explicar) *propose* (proponer)

**Uso de should:** A veces se utiliza la forma *should* que en este uso no debe traducirse como modal, sino simplemente debe traducirse el verbo que le sigue en subjuntivo.

En estas oraciones uno de los participantes, generalmente el sujeto, es aquel que realiza el proceso de pensar, sentir o decir, y va seguido de otra cláusula que contiene aquello que se piensa, se recuerda, se dice, se pide o se ordena.

A veces en la segunda cláusula también aparece la persona gramatical a la que se le pide, ordena, recuerda o advierte algo.

En castellano las dos partes de la oración se conectan con “*que*” seguido de *subjuntivo presente o pasado*.

**a) Subjuntivo con verbo en su forma básica (con o sin *should*):**

1. It was suggested that the government **not raise** taxes at the end of the year.
2. We recommend that every applicant **apply** for the job in person.
3. They recommend that every student **be** here at three.
4. I insist that she **come** immediately.
5. They insist that she **be** here immediately.
6. The Prime Minister insisted that he **be** photographed with the President.
7. He **requests/requested** that I **be** there as soon as possible.
8. Our decision is that the school **remain** closed.
9. The engineer proposes that his decision **be** accepted. (**be: subjuntivo**)

## Storage instructions

### Safety notice

It is important that the actuator **should only be used** within pressure limits indicated in our technical specifications.

Operating the actuator over pressure limits will damage internal parts as well as cause damage to the housing.

Operating the actuator over or under temperature limits will damage internal and external components.

Operating the actuator in corrosive environments with incorrect protection may damage the internal and external parts.

Isolate all air lines and make sure that actuator air connection **is vented** before installation or servicing of the actuator.

### b) Subjuntivo expresado con *to-infinitive*

1. I prefer them **to come round** here every day.
2. They don't believe him **to have worked** much.
3. She doesn't believe him **to have been working** much lately.
4. I believe him **to be** an honest man.
5. I don't believe him **to be** an honest man.
6. They intend us **to be** completely discredited.
7. I don't want unpleasant words **said** to people.
8. I want you **to remember** to loop the cable over the platform.
9. Could you ask the professor **to bring** the tester?
10. Each one would be requested **to select** an option.
11. The teacher told us **to leave** the exercise undone.
12. The notice warned us against **taking** this path. (-ing)

### 4. Imperativos: Después de verbo en imperativo afirmativo o al traducir el verbo en imperativo negativo.

1. "Let me **help** you with that," he offered.
2. **Ensure** that ventilation **is provided**.
3. **Make sure** ventilation **is provided**.
4. **Make certain** that formation fluids are not entering the well bore.
5. **Don't talk** to her!
6. **Don't stop** the movement.

### 5. Condicionales

|         |                      |                                            |                            |
|---------|----------------------|--------------------------------------------|----------------------------|
| Tipo II | (If + pasado simple) | subjuntivo pasado<br>(ref.presente-futuro) | si... -ara/-ase -iera/iese |
| Tipo II | (were + inversión)   | subjuntivo pasado                          | si... -ara/-ase -iera/iese |

|                                     |                                      |                                                       |
|-------------------------------------|--------------------------------------|-------------------------------------------------------|
| Tipo II (should + inversión)        | subjuntivo pasado                    | si.../ en caso de de/ si acaso/ – ara/ase – iera/iese |
| Tipo III (If + pasado perfecto)     | subjuntivo pluscuamperfecto          | si... hubiera/hubiese ...-ado ido                     |
| Tipo III (sin if – had + inversión) | subjuntivo pluscuamperfecto          | si... hubiera/hubiese ...-ado ido                     |
| Tipos II o III (con otros nexos)    | subjuntivo pasado o pluscuamperfecto |                                                       |

1. If he **had worked** more, he would have collected more.
2. If we **had been working** all the time, the project would be ready now.
3. **Had** a crack **been found**, the material would have required inspection.
4. **Should** the material **show** any signs of failure, the company would replace it.
5. **Had** the desilters or centrifuges **been fed** by centrifugal pumps, some type of flow meter **would have been required** to accurately determine the feed rate.
6. If a flow meter **were unavailable**, determine the flow rate to the solids control equipment.

6. Verbos que deben traducirse con la palabra “que” seguido de subjuntivo.

|                                                                                                                                          |                                                                              |
|------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|
| keep...from verbo+ ing<br>prevent ...from verbo+ing<br>restrict...from verbo+ing<br>Stop ...from verbo+ing                               | Evitar que algo o alguien haga algo                                          |
| enable + persona gramatical + to infinitive<br>allow + persona gramatical+ to infinitive<br>let + persona gramatical + infinitivo sin to | permitir que algo o alguien haga algo                                        |
| wish + cláusula                                                                                                                          | deseo que/ desearía que .../ querría que + subjuntivo / “Ojalá” + subjuntivo |
| it is to be wished                                                                                                                       | es deseable que .../es de esperarse que...                                   |
| be likely to + verbo                                                                                                                     | ser posible que/ser probable que + subjuntivo                                |

1. This problem is likely to get worse.
2. There will likely **be** a public plan as a backup for SMEs.
3. These problems are likely to happen.
4. I wish he were here.
5. We wish you **to do** it.
6. It is to be wished that our ideas **will be considered** soon.
7. We wish that our ideas **will be considered** soon.
8. I wish I **knew**.
9. Low-molecular-weight (LMW) shale inhibitors (e.g., various amines) serve as clay intercalators and hydration suppressants and **keep** cuttings **from** swelling and dispersing
10. The procedure is convenient because it keeps oil from **being spilled**.
11. The mud cleaner screen **keeps** larger particles **from** entering the system.
12. The excess drilling fluid (2400 bbl) would need to be removed from the drilling-fluid system to keep the pits from overflowing.

13. When a back tank (possum belly), is used, the flowline should enter at the bottom to prevent solids from settling and building up.
14. This device will help **prevent** the shaft **from** bending.
15. After each operation, flush the entire system with clean fluid to **prevent** the mud **from** drying and plugging the system.
16. The use of this device will prevent chemical waste from **settling** inside the pipes.
17. The flowline must have sufficient slope to **prevent** fluid **from** overflowing the bell nipple.
18. Poor solids control not only prevents achieving a good drilling rate, but it also affects hole cleaning.
19. Better drilling fluid properties were required to prevent trouble.
20. Coarse screens **allow** more drilled solids **to pass through**.
21. Sometimes large amounts of oil are encountered, and it is desirable **to allow** some oil **to biodegrade** before mixing with dirt to achieve the final waste/soil mixture.
22. Soil humus adsorbs large amounts of sodium, **allowing** the clay in the soil **to remain** flocculated.
23. The most common practice is to bury the solids in the existing reserve pit after the water **is allowed to evaporate**.
24. This **enables** the chemicals **to** fully **react** with the particles.
25. Google can enable us **to go** faster and farther.
26. One of the primary functions of the drilling fluid is to bring drilled cuttings to the surface in a state that **enables** the drilling-fluid processing equipment **to remove** them with ease. To achieve this end, quick and efficient removal of cuttings is essential.

Since ignition temperature is the temperature at which ignition may occur due to contact with a hot surface, it follows that motor selection must be based on the maximum surface temperature that will never exceed the autoignition temperature of any potentially explosive mixture **likely** to exist. The National Electrical Code mandates that motors be marked to indicate the maximum temperature when they are placed in service with combustible materials.

The IEC classifies hazardous locations into zones according to the probability of a potentially explosive atmosphere occurrence. The degree of danger varies from extreme to rare:

- . Zone 0: An explosive gas/air mixture is continuously present or present for long periods of time. No electric motors may be used in these areas.
- . Zone 1: An explosive gas/air mixture **is likely to occur** in normal operations.
- . Zone 2: An explosive gas/air mixture **is not likely to occur** in normal operations and, if it does occur, will exist for only a short time.

There is some evidence that above 180 rpm, turbulent flow ensues for many fluids. At these high levels, there seems to be little additional benefit to hole cleaning from increasing pipe rotation any further; most likely this is because cuttings beds cannot form in turbulent flow. During sliding, hole cleaning is minimal and cuttings beds are likely to form. Thus, sliding should be kept to a minimum during any drilling operation. Indeed, this is one of the reasons that rotary steerable tools have become popular.

## 7. Causativos:

Estas oraciones se componen de dos partes: causante o iniciador de la acción + realizador de la acción, y en este contexto, los verbos cause, make, have y get se traducen como hacer que alguien haga algo, o hacer que algo se haga o sea hecho.

|                                                                                                                                                                                                        |                                                 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|
| <b>cause + persona gramatical + to infinitive</b><br><b>get + persona gramatical + to infinitive</b><br><b>make + persona gramatical + verbo base</b><br><b>have + persona gramatical + verbo base</b> | <b>hacer que alguien o algo haga algo.</b>      |
| <b>Pasiva causativa</b>                                                                                                                                                                                |                                                 |
| <b>have + persona gramatical + participio pasado</b><br><b>get + persona gramatical + participio pasado.</b>                                                                                           | <b>hacer que algo se haga/ hacer hacer algo</b> |

1. This substance **causes** the reaction **to stop**. (Comparar: This substance causes the reaction)
2. The teacher **made** the student **explain** the results of the project.
3. Did you **make** the voltage **fall**?
4. The company **had** the characteristics of the product **improved** and the components **modified**.
5. (The company **had** the characteristics of the product)
6. The company's refusal **has caused** the employees **to go** on strike.
7. Flocculation **causes** particles **to join together** to form a loose, open network.
8. Clays **would cause** the circulating fluid to thicken, thus increasing the viscosity of the fluid.
9. Application of this centripetal acceleration **causes** heavier particles **to move outward** against the walls of the cone.
10. **Having** the house **painted** before selling it increased its market value significantly.
11. She was focused on **having** her team **finish** the report by Friday.
12. The company **has had** the legal team **review** the contract.
13. Elevated temperatures can also destroy direct and invert-emulsion systems and can **cause** gelation in clay- based muds, either of which can negatively affect equipment performance.
14. Drilled solids create poor fluid properties and **cause** many of the costly problems associated with drilling wells.
15. This **makes** the PHPA **appear to be** much more viscous than it really is.
16. Foaming **makes it difficult** to separate gas from liquid. The best practical defoamers are aluminum stearate and alcohol.
17. *Inertia*. Force that **makes** a moving particle **tend to maintain** its direction or a particle at rest to remain at rest.

#### 17.1 INTRODUCTION TO ELECTRICAL THEORY

The properties of electricity are voltage, current, and resistance. Voltage (also known as electromotive force, or emf ) is the strength of a circuit that causes current to flow through the resistance in the circuit. It is a force that causes electrons to move from one atom to the next. Voltage is analogous to pressure in the mechanical system.

**8. For+ FN + to infinitive en posiciones nominales:** Se trata de estructuras con verbo en posición de sujeto, objeto, etc.

**for + algo/alguien + to infinitivo = QUE + algo/alguien + haga algo**

It is important **for you to come**.

Es importante **QUE (usted) venga**.

It was essential **for the equipment to be calibrated**.

Era esencial **que el equipo se recalibrara**.

- a. There's no need **for you to say** you're sorry.
- b. I'm waiting **for the architect to finish** the design.
- c. At lower temperatures, there is a tendency **for the structure to distort**.
- d. **For the bridge to be** safe under seismic loading is a primary requirement of the revised building code."

**For... to infinitive para indicar propósito**

1. The project was too expensive **for** the company **to accept** it.
2. **For** a pollution-control strategy **to be considered** by the U.S. Environmental Protection Agency, it must be the most effective and reliable technology available.
3. **For** this thesis **to be** applied, the social phenomena involved should be kept constant.
4. This development **made it possible for** the shale shaker **to remove** particles greater in size than API 80\_API 80 (177 microns).
5. Agitation will also help in the removal of gas, if any is present, by moving the gaseous drilling fluid to the surface of the tank, providing an opportunity **for the gas to break out**.
6. The degasser discharge pit is also the suction pit **for** the centrifugal pump used to pump drilling fluid through the eductor on the degasser.

In most wells, the casing is done in stages called a *casing program* during which the well is drilled, cased, drilled deeper, cased again, drilled deeper, and cased again.

In order for the gas or oil to flow into the well, the casing is shot with explosives to form holes called perforations (Fig. I-10). A long length of narrow diameter steel pipe (tubing) is then suspended down the center of the well. The produced fluids (water, gas, and oil) are brought up the tubing string to the surface to prevent them from touching and corroding the casing that is harder to repair. The tubing is relatively easy to repair during a workover.

Most oil wells, however, do not have enough pressure for the oil to flow to the surface and artificial lift must be used. A common artificial lift system is a sucker-rod pump (Fig. I-11). A downhole pump on the bottom of the tubing string is driven by a beam-pumping unit on the surface. The pump lifts the oil up the tubing to the surface.

**Nontechnical Guide to Petroleum Geology,  
Exploration, Drilling, and Production**

### 9. Frases y conectores que deben traducirse con la palabra “que” seguida de subjuntivo.

| Condicionales especiales           |                                                            |
|------------------------------------|------------------------------------------------------------|
| as if                              | como si + subjuntivo                                       |
| but for                            | a no ser por / si no fuera por .../ si no hubiese sido por |
| even if                            | aún si / aún cuando / aunque ...                           |
| even though                        | aunque                                                     |
| in case / in the event             | en caso de que                                             |
| provided / providing (that)        | siempre que / si                                           |
| supposing                          | suponiendo que/ si                                         |
| unless                             | a menos que                                                |
| whether                            | si... / ya sea que                                         |
| Otros casos                        |                                                            |
| once                               | una vez que...                                             |
| no matter what                     | no importa lo que ... + subjuntivo                         |
| since                              | dado que (causa/consecuencia)                              |
| so that                            | de modo tal que                                            |
| until                              | hasta que                                                  |
| No matter                          | No importa lo que, no importa, sin importar                |
| Pronombres , adjetivos o adverbios |                                                            |
| whatever                           | cualquier cosa que ... lo que sea, lo que                  |
| whichever                          | cualquiera que / cualquier cosa que, cualquier, cual sea   |
| whoever                            | quienquiera que, quien sea,                                |

|          |                                                         |
|----------|---------------------------------------------------------|
| whenever | cuando sea que                                          |
| wherever | en cualquier lugar que, donde sea que, donde quiera que |

1. Even though he **has worked** well, his contract will not be signed.
2. Whatever problem you **have**, an assistant will help you.
3. Crews need to be alert to torn screens **no matter** what shaker is used.
4. Solids-control systems, **no matter** how good, cannot totally separate the drilling fluid from the drilled cuttings.
5. The damaged part will look **as if** a spoon were used to scoop sections of metal from the part.
6. If the discharge from the mud hopper is routed into a tank that is not stirred properly, a large quantity of commercial materials could settle, **even if** the hopper is properly dispersing and wetting the materials.
7. **Even if** the actual  $V_s$  **were** 57% instead of 60%, the low-gravity solids concentration would be 34% volume.
8. Correction factors should be determined and applied **in cases** in which the base liquid contains more than 10,000 ppm salt, or emulsified oil.
9. Underbalanced drilling may be conducted using any type of fluid, **provided that** the hydrostatic column of that fluid is less than formation or pore pressures.
10. These smaller hydrocyclones became known as desilters, **since** they removed solids called silt down to 15 to 30 microns.
11. The desirable effect is to reduce the liquid content of the discarded drilled solids **so that** they can be removed from a location with a dump truck instead of a vacuum truck.
12. Use this procedure to remove a cuttings bed **once** it has formed.
13. **Once** the sample has completely passed through the stack of sieves, dry each sample of solids on each individual sieve.
14. Dumping the back tank into the pits (to clean the screen or for **whatever reason**) is a form of bypassing the shale shaker and should not be done.
15. Then, the contents of the pit can run down the hill and collect in **whatever** is at the bottom.
16. **Whichever** shaker or shakers are used, consideration must be given to providing sufficient safe power to the shaker motors.
17. Replace screens **whenever** necessary.
18. The mud cleaner is effective in removing solids before they grind to smaller size, and should be used **whenever** circulating.

## 10. Introductor "it"

### a) Recordar: introductor "it" + adjetivo+ to infinitive

1. It is advisable to start early.
2. It is fundamental to make an informed decision.
3. For the large jobs, it is advantageous to have some storage (buffer) for generated waste.

4. The aboveground pit is constructed where it is impractical to dig a pit.

**b) Introducutor "it" seguido de adjetivo + "that" = "que" + cláusula en subj.** Estas oraciones introducen valoraciones (juicios de valor, reacciones emotivas, dudas, desconocimiento o negación sobre lo que sigue)

1. It is imperative that more decisions **are made** by the shareholders.
2. It is probable that the earth **is** just as old as the moon.
3. It is essential that all the mathematical symbols **be** understood.
4. It is almost impossible that they **arrive** on time.
5. Thus **it is important that** the burial cell be placed below the rooting zone of future plants.
6. It is imperative that the solids **be** removed from recycled water because they act as a defoamer and tend to interfere with the development of proper recyclable foam.
7. It is imperative that individual lengths align precisely within a section.

**c) Introducutor "it" seguido de adjetivo + "for" + persona gramatical + verbo subj.**

1. It is essential *for* everyone **to be** informed of the new regulations.
2. It is advisable for the students **to start** early.
3. It is impossible for the shareholders **to make** more decisions.
4. It is possible for companies to permit, own, and operate their own disposal facilities, but it has not been done to date.

## 11. Introducutor "there"

1. There are/were/ will be/ would be/ could be/ must be/ should be new regulations.

**There + seem/ appear/ look**

2. There seem to be new regulations.
3. There appears to be a new regulation.
4. There seems/ appears/ looks advisable to consider the budget.

**El modo subjuntivo en las construcciones impersonales con "there" introductorio.**

5. **There need** to be new regulations.
6. **If there were** new regulations, this industry would be flourishing.
7. This company would have flourished **if there had been** new regulations.
8. This company could have flourished **if there could have been** new regulations.
9. If there could have been a clearer recognition that widespread burning of coal pollutes the air, serious consequences for the environment and the climate would have been prevented.

### Pipe Rotation

As pipe rotation rate increases, the pipe drags more fluid with it. In deviated wells, this layer of drilling fluid disrupts cuttings beds that have formed around the pipe while lying on the low side of the hole. Step changes appear to be the norm, occurring in most cases at around 85, 120, and 180 rpm. **There is** some evidence that above 180 rpm, turbulent flow ensues for many fluids. At these high levels, **there seems to be** little additional benefit to hole cleaning from increasing pipe rotation any further; most likely this is because cuttings beds cannot form in turbulent flow. During sliding, hole cleaning is minimal and cuttings beds are likely to form. Thus, sliding should be kept to a minimum during any drilling operation. Indeed, this is one of the reasons that rotary steerable tools have become popular.

Drilling Fluids

Drilling Fluids Processing Handbook

## 12. Pasivas especiales:

|                 |                                      |
|-----------------|--------------------------------------|
| be expected to  | esperarse que                        |
| be permitted to | permitirse que                       |
| be allowed to   | permitirse que                       |
| be asked to     | pedírsele que (me, te, le, nos, les) |
| be requested    | pedírsele que (me, te, le, nos, les) |
| be assumed to   | asumirse que / pensarse que          |

1. The dissolved protein was allowed **to pass** through the membrane.
2. The engineers will be requested **to present** their qualifications.

## 13. Cláusulas con referencia temporal futura (en un tiempo presente o pasado) introducidas por “when”

1. When he works here, you will notice his ability.
2. When we are working there, you may come and help us.

### 3. All removal compartments, except the sand trap, should be well stirred or agitated to ensure even loading of solids-removal equipment.

Solids-control equipment works best when the solids loading remains constant. Slugs of large quantity of solids tend to plug the lower discharge opening in desilters. When this occurs, drilled solids will not be removed until the plugged cones are cleaned.

## Outlets in the bathroom

The most recent National Electrical Code requires that outlets in the bathroom and other sensitive areas be of the ground fault current interrupt (GFCI) variety; GFCIs are designed to trip more quickly than the standard circuit breaker. The commercial unit of Fig. 4.26 trips in 5 ns.

It has been determined that 6 mA is the maximum level that most individuals can be exposed to for a short period of time without the risk of serious injury. A current higher than 11 mA can cause involuntary muscle contractions that could prevent a person from letting go of the conductor and possibly cause him or her to enter a state of shock.

Higher currents lasting more than a second can cause the heart to go into fibrillation and possibly cause death in a few minutes. The GFCI is able to react as quickly as it does by sensing the difference between the input and output currents to the outlet; the currents should be the same if everything is working properly. An errant path such as through an individual establishes a difference in the two current levels and causes the breaker to trip and disconnect the power source.

## Metal- to- metal wear

Properly lubricated metal parts wear slowly, for a film of the lubricant keeps the metals from actually touching. Inadequate lubrication or excessive pressure will allow metal to make contact and then a gall or cold weld may result as one part slides over the other. Two pieces of aluminium may be cold welded by power brushing the surfaces and then pressing or rolling the prepared surfaces together. In a similar manner, a steel part that slides over another steel member may rub off the separating film. With high enough contact pressure, the iron atoms of each surface may get close enough to each other to exert their potential atomic forces of attraction. Frequently the little weld thus formed is strong enough to hold and pull some of the parent metal. This bit of metal will plow into the surface of the other member, picking up more metal, and soon the parts will be keyed or frozen together. If this does not happen, they will certainly be chewed up to the extent that they must be replaced.

Certain combinations of metal gall less readily than others: steel does not gall when working with brass or bronze. In general, hard metals gall less readily than soft ones.

## COMPARACIÓN DE ADJETIVOS Y ADVERBIOS

| grado positivo<br>(forma base: 1 o 2 sílabas -y -ow) | grado comparativo (más ... que) | grado superlativo (el más ...) | comparación de igualdad (tan...como) |
|------------------------------------------------------|---------------------------------|--------------------------------|--------------------------------------|
| short                                                | shorter (than...)               | the shortest                   | not/as –so short as                  |
| fast                                                 | faster (than...)                | the fastest                    | not/as –so fast as                   |
| hot                                                  | hotter (than...)                | the hottest                    | not/as –so hot as                    |
| tiny                                                 | tinier (than...)                | the tiniest                    | not/as-so tiny as                    |
| narrow                                               | narrower (than...)              | the narrowest                  | not/as-so narrow as                  |

| grado positivo<br>(forma base: <b>2 o más sílabas</b> ) | grado comparativo<br>(más ... que) | grado superlativo<br>(el más ...) | comparación de<br>igualdad (tan...como) |
|---------------------------------------------------------|------------------------------------|-----------------------------------|-----------------------------------------|
| expensive                                               | more expensive than                | the most expensive                | not/as-so expensive as                  |
| dangerous                                               | more dangerous than                | the most dangerous                | not/ as-so dangerous as                 |

| grado positivo (forma<br>base – <b>todos</b> ) | grado comparativo <b>de inferioridad</b><br>(menos...que) | grado superlativo <b>de inferioridad</b><br>(el<br>menos..) |
|------------------------------------------------|-----------------------------------------------------------|-------------------------------------------------------------|
| dangerous                                      | less dangerous (than)                                     | the least dangerous                                         |

- Algunas formas *irregulares*:

| grado positivo<br>(forma base)                                    | grado comparativo<br>(más ... que/mejor que) | grado superlativo<br>(el más .../ mejor que )                                                                                                                                          | comparación de<br>igualdad<br>(tan...como) |
|-------------------------------------------------------------------|----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|
| good (adjetivo) well<br>( adv. de modo)                           | better (than...)                             | the best                                                                                                                                                                               | not/ as-so good as<br>not/ as well as      |
| bad                                                               | worse (than)                                 | the worst                                                                                                                                                                              | not/ as-so bad as                          |
| far                                                               | farther (than)                               | the farthest                                                                                                                                                                           | not/ as far as                             |
| much (mucho-a) many<br>(muchos-as)                                | more (than) más que/<br>más de               | <b>most + adjetivo:</b> más, la<br>más, lo más... <b>most +<br/>sustantivo:</b> la mayoría<br>de, la mayor parte de...<br><b>most+ adverbio:</b> muy<br><b>most:</b> lo máximo, lo más | not/ as much as not/<br>as-so many as      |
| little (adjetivo)<br>pequeño                                      | smaller                                      | the smallest                                                                                                                                                                           | as/so little as                            |
| little / a little<br>(adv.cant.)<br>incontables<br>poco / algo de | less (than) menor/menos de                   | the least (el/la/lo/menos)                                                                                                                                                             | not/ as little as                          |
| few/a few(adv.cant.)<br>pocos /algunos (cont)                     | fewer (than) less (than)                     | the fewest/the least                                                                                                                                                                   | as few as                                  |

- An American and two Japanese physicists on Tuesday won the Nobel Prize in Physics for their work exploring the hidden symmetries among elementary particles that are **the deepest constituents of nature**.
- Since the tank is **deeper** than 6 feet, flat (turbine) impellers cannot be used; therefore, canted impellers are chosen.

## Pour Point

All crude oils contain some paraffin molecules. If the paraffin molecules are 18 carbon atoms or longer in length, they are waxes. Waxes are solid at surface temperature. A crude oil containing a significant amount of wax is called a *waxy crude oil*. In the subsurface reservoir where it is very hot, waxy crude oil occurs as a liquid. As it is being brought up the well, it cools, and the waxes can solidify. This can clog the tubing in the well and flow-lines on the surface. The well then has to be shut in for a workover to clean out the wax.

Oil can be as thick and black as tar or as thin as water. Petroleum has a lot of energy. We can turn it into different fuels—like gasoline, kerosene, and heating oil. Most plastics and inks are made from petroleum, too.

Pollution from cars is a big problem in many parts of the country. Oil companies are making cleaner gasoline and other fuels every year.

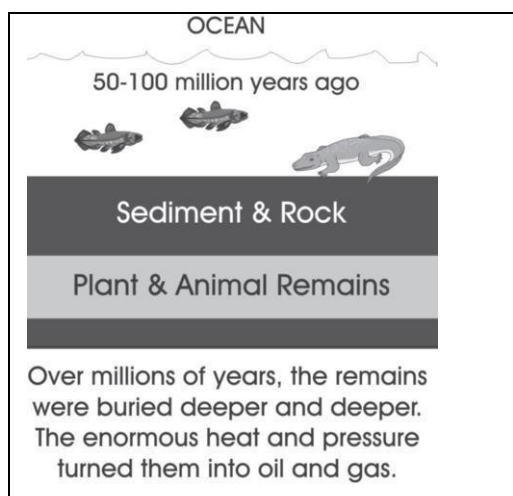
Oil can pollute soil and water, injuring the animals that live in the area. Oil companies work hard to drill and ship oil as safely as possible. They try to clean up any oil that spills.

**Lufkin's Oilfield Service Group refurbishes and sells used pumping units, and provides installation, field services, machine shop repair, and new OEM parts. We guarantee you the best quality parts, the most comprehensive service, the fastest turnaround available, and competitive pricing.**

## COMPARATIVOS ESPECIALES

### A. REITERACIÓN DEL COMPARATIVO (*comparativo +and+comparativo*)

- Indica: Aumento o disminución gradual.
  - Se traduce: ***cada vez más.../menos...***
1. The crack was **getting greater and greater**.
  2. Apple's *MacBook* **gets bigger and bigger**.
  3. Galileo discovered that the consecutive swings **were getting smaller and smaller** as the pendulum was slowly coming to rest.
  4. Equipment changes and improvements have responded to the necessity to treat **more and more expensive** drilling fluids.
  5. Microtunneling has become very popular in Europe and is being used **more and more** in the United States.
  6. As oil well drilling encountered **more and more difficult conditions**, hole problems finally became undeniably associated with excessive drilled solids.



### Properties

The color of crude oil ranges from colorless through greenish-yellow, reddish, and brown to black. In general, the darker the crude oil, the lower the °API. The smell varies from gasoline (sweet crude) to foul (sour crude) to fruity (aromatic crude). Crude oil has a calorific heat value of 18,300 to 19,500 Btu/lb.

Nontechnical Guide to by Norman J. Hyne, Norman Petroleum Geology, Expl.. J. Ph.d Hyne

### B. COMBINACIÓN DE DOS O MÁS COMPARATIVOS (*the +comp. .... +the+comp.*)

- Indica: un aumento o disminución en la misma proporción, o en paralelo.
  - Se traduce: **Cuanto más/menos, mientras más/menos... tanto más/menos...**
1. **The more heat, the faster** ice melts.
  2. **The tighter** the belt, **the sooner** it will wear out.
  3. **The faster** the propeller turns, **the faster** the vehicle moves.
  4. **The lower the aniline point** of a particular oil, **the greater** its propensity for damaging rubber parts.
  5. **The farther** the vortex finder is extended, **the better** the separation.
  6. **The more sensitive** the instruments **become, the greater** will **become** the number of tiny earthquakes which they record.
  7. **The denser the drilling fluid, the more** the displacement force of the bubble upward.
  8. **The more fluid** is pumped or ejected, **the less the residence time** in the vacuum; or contrary-wise, with more gas, there will be less fluid throughput.
  9. **The higher the tank** is above the surface of the drilling fluid, **the more of** the energy from the jet or pump is used to lift the fluid.
  10. Generally, **the higher the iodine number, the more severe** the destructive action of the oil on rubber.

### C. MOST

- Ver tabla de comparativos y superlativos.
11. **Most** of the water vapour in the air comes from the sea.
  12. This is a **most** powerful motor.
  13. This is the **most** powerful motor we can manufacture.
  14. **Most** rocks are mixtures of different substances.
  15. **Most of the people** involved with the API work volunteered to write this new book.
  16. The fluid flows across a shale shaker before entering the mud pits. **Most shale shakers** impart a vibratory motion to a wire or plastic mesh screen. This motion

allows the drilling fluid to pass through the screen and removes particles **larger than** the openings in the screen.

17. These systems, or combinations of the various items discussed above, meet **most environmental requirements**.
18. Dewatering units reduce waste volume and disposal costs substantially and are **most economical** when used to process large volumes of expensive drilling fluid.

**Texas and Alaska are the states that produce the most oil.**

A lot of oil is under the oceans along our shores. Oil rigs that can float are used to reach this oil. Most of these wells are in the Gulf of Mexico.

**Most of our cars, trucks, and planes are powered by fuel made from oil.**

#### D. FURTHER

- La palabra "**far**" tiene dos comparativos: **farther**: más lejos / más lejano y **further**.
  - **Further** se traduce como **extra, adicional** cuando modifica a un sustantivo, como **más, o aún más, o más allá** cuando funciona como adverbio y como **más aún** si funciona como nexos.
  - **Further** también puede ser un verbo: fomentar, favorecer, impulsar, propiciar
1. The company is planning **further** experiments to clarify the origin of the failure.
  2. The reduction of magnetic flux becomes negligible at sub-micrometre distances, but in thin films the effect may survive **much farther** into the material.
  3. Part of the fluorescence light, therefore, travels very much **farther** through the material than it would if it could escape equally in all directions.
  4. In aqueous-based fluids, when drilled solids **become too small to be removed** by the solids-control equipment, they are recirculated downhole and dispersed **further** by a combination of high- pressure shear from the mud pumps, passing through the bit, and the additional exposure to the drilling fluid.
  5. Screen use records should be established for **further guidance**.
  6. As gas cutting increases, the flow properties of the fluid increase and the head above the suction decreases, all of which **will further degrade** the performance of a positive displacement pump.
  7. Keeping a separator operating under pressure is a critical factor in drilling safety. **Further**, the separator system is generally instrumented to give a history of annular pressure and measurements of gas, water, and oil volumes.
  8. The drilling fluid enters the vacuum chamber of the unit through holes in the top of the rotating pipe, and at that point is **further accelerated** and sprayed outward against the walls of the vacuum chamber.
  9. Since water cannot infiltrate the soil matrix, there is no water available to support plant life. **Further**, salt inhibits the transport of water via osmosis to the plant.

(source: Drilling Fluids Processing Handbook)

### E. INTENSIFICADORES DE LOS ADJETIVOS Y FRASES COMPARATIVAS

- ***much***(mucho), ***even*** (aún, hasta, incluso) , ***far*** (muy, más, mucho), ***a bit*** (algo, un poco) , ***a little*** (un poco), ***quite*** (algo, bastante), ***rather***(algo), ***slightly*** (algo, levemente), ***somewhat*** (algo, un poco), ***a lot*** (mucho)
10. Massive stars burn **brighter** and **hotter** than smaller stars, and exhaust their fuel **far more** rapidly.
  11. Much of this material is **rather soft**.
  12. Recent experiments give a **far more** striking proof of this phenomenon.
  13. The readers who were not present at the Brighton meeting have got a **somewhat** incorrect impression as to the true state of affairs.
  14. The actual mass of an atom may be **somewhat less** than the sum of the masses of component positive and negative electrons when in the freestate.
  15. The evil effects of drilled solids are real. Acknowledging that fact and preparing to properly handle them at the surface will result in **much lower drilling costs**.
  16. However, it is clear that, in most cases, drilled solids have a much greater effect than barite on viscosity.
  17. The shape of solids frequently makes screening difficult. In single-layer screens, particles that are **only slightly larger** than the opening size can **become wedged** into openings.
  18. The apex velocity in rope discharge is **far less than** that in spray discharge; therefore, separation is **less efficient** because **fewer solids** are discarded.
  19. Other than cone and manifold plugging, improperly sized or operated centrifugal pumps are **by far** the greatest source of problems encountered with hydrocyclones.
  20. The use of atmospheric degassers is **somewhat restricted** to low-weight, low-yield point fluids.
  21. In such fluids, the target limit of % LGS may be **somewhat higher than** 5%.

Drilled-solids management has evolved over the years as drilling has **become more challenging** and environmental concerns **have become paramount**. Equipment changes and improvements have responded to the necessity to treat **more and more expensive drilling fluids**. In this context, probably the largest impact on the drilling industry has been the recognition that polymers can make **much better drilling fluids** than those used heretofore even though they are expensive. Polymer drilling fluids require **lower** drilled-solids concentration, so superior solids removal systems were developed **to meet those demands**.

### F. ALGUNAS FRASES Y CONECTORES QUE CONTIENEN COMPARATIVOS

|                               |                                |
|-------------------------------|--------------------------------|
| <i>as much as</i>             | tanto como                     |
| <i>at last</i>                | por último, finalmente         |
| <i>at latest</i>              | a más tardar                   |
| <i>at the least /at least</i> | al menos por lo menos          |
| <i>first and foremost</i>     | primero y principal, ante todo |
| <i>last but one</i>           | penúltimo                      |

|                                                                    |                                       |
|--------------------------------------------------------------------|---------------------------------------|
| <i>more or less</i>                                                | más o menos                           |
| <i>none the less</i>                                               | no obstante                           |
| <i>not in the least</i>                                            | en lo más mínimo / de ninguna manera  |
| <i>outer/inner</i>                                                 | externo, exterior / interno, interior |
| <i>so far as...is concerned</i><br><i>as far as...is concerned</i> | en lo que concierne a                 |
| <i>the former</i>                                                  | el primero (ya mencionado)            |
| <i>the latter</i>                                                  | el último mencionado                  |
| <i>upper/lower</i>                                                 | superior/inferior                     |

22. Atmospheric brown clouds may have masked **as much as** half of the global warming attributed to the recent rapid rise in greenhouse gases
23. The condensers provided to store the magnetic field energy can store perhaps twice **as much as** when used on alternating current.
24. The **latter effect** has not been considered previously
25. UBD or “balanced” drilling with conventional drilling fluids is no different than conventional overbalanced drilling **as far as** basic solids control **is concerned**.
26. The **upper end** is in the downstream compartment.

## CONECTORES

### LA ORGANIZACIÓN DEL TEXTO

Llamamos **conectores lógicos** o **elementos conjuntivos** a todas aquellas palabras que tienen como función:

- conectar elementos dentro de una oración (conjunciones *and, or, but, yet*, relativos *who, which, that, when, why, where*.)
- conectar oraciones entre sí (*but, or, so, then, etc*)
- conectar párrafos o grupos de oraciones entre sí y con el resto del texto (*however, on the other hand, after that, because of this, etc*)

Los conectores son palabras o frases que al cumplir su función establecen entre las partes conectadas distintos tipos de **relaciones lógicas**, que se pueden clasificar del modo siguiente:

|                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Conectores <b>aditivos</b> o de <b>adición</b> | and, and also, also, as a matter of fact, further, furthermore, in addition, additionally, besides, moreover, not only but also. Either...or, neither...nor, nor,<br><b>de alternativa</b> or, or else alternatively, apart from this, as well as that,<br><b>de explicación o clarificación:</b> that is, i.e, I mean, in other words, that is to say, as can be seen <b>de ejemplificación:</b> for instance, for example, thus, e.g., viz., such as, <b>de comparación:</b> likewise, similarly, in the same way, as well as, on the other hand, by contrast, in contrast, in reality, as opposed to this (añade algo diferente) <b>de modo perspectiva y punto de vista:</b> in this way, considering this, in this sense, from this perspective, according to, |
|------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-----------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Conectores<br><b>adversativos, o<br/>de oposición o<br/>contraste</b> | yet, though, but, however, on the other hand, as against that, only,<br>unless, still <b>de concesión</b> : although, nevertheless, however, except for,<br><b>de corrección</b> : instead, rather, on the contrary, different from,                                                                                                                                                                                                                                                               |
| Conectores<br><b>de causa y<br/>consecuencia</b>                      | so, then, for, for this reason, because, hence, therefore, consequently, because of this, as a result,<br>in consequence, since, due to this, thus, due to, owing to, so that,<br><b>de propósito</b> : for this purpose, for this reason, in order to, so as to, so that,<br><b>de condición</b> : in that case, in case, in such an event, if, then, under the circumstances,<br>otherwise, unless, even if, as long as, but for, unless, provided, providing, whether,                          |
| Conectores<br><b>temporales<br/>o de orden<br/>textual</b>            | <b>de secuencia y enumeración</b> : first, at first, second, then, next, after that, soon, after a time,<br>next time, on another occasion, next day, from now on, afterwards, since, to begin with, finally,<br><b>de simultaneidad</b> : at the same time, meanwhile, at this moment, while, whereas<br><b>de anterioridad</b> : previously, before that, up to now,<br><b>conclusivas, de resumen y cierre</b> : finally, at last, in conclusion, to sum up, in short, briefly, to<br>conclude, |

Linux is an operating system like many others, **such as** DOS, VMS, OS/360, **or** CP/M.

It performs many of the same tasks in very similar manners: **i.e.** it is the manager and administrator of all the system resources and facilities. Without it, nothing works.

**Despite this**, most users can go on indefinitely without knowing even which operating system they are using, **let alone** the basics of how the operating system works.

**For example**, if you own a car, you don't really need to know the details of the internal combustion engine to understand that this is what makes the car move forward. **Moreover**, you don't need to know the principles of hydraulics to understand what isn't happening when pressing the brake pedal has no effect.

## PALABRAS Y FRASES QUE FUNCIONAN COMO CONECTORES

### INGLÉS

above all  
according to  
accordingly  
actually  
admittedly  
admitting that  
after  
after all  
after a time  
afterwards  
again  
already  
also  
alternatively  
although  
always  
amid  
among  
and

### ESPAÑOL

ante todo, sobre todo  
según, conforme a, de acuerdo con  
por lo tanto, pues, en consecuencia  
en realidad  
concedido que  
admitiendo que  
después  
después de todo  
después de un rato, de un tiempo  
luego, más tarde, después  
nuevamente, de nuevo, otra vez  
ya  
también  
alternativamente, por turno  
aunque, si bien  
siempre  
en medio de  
entre  
y, e, u

and also  
and ... too  
anyhow  
apart from  
and so on  
and so on and so forth  
apart from this  
arising out of this  
as  
as a consequence  
as a final point  
as a matter of course  
as a matter of fact  
as against  
as an illustration  
as a whole  
as far as  
as far as ...is concerned  
as follows  
as from  
as if  
as for  
as...as  
aside  
as late as  
as long as  
as many as  
as much  
as much as  
as regards  
as soon as  
as soon as possible

as such  
as to  
assuming that  
as though  
as well  
as well as  
as with  
as yet  
at all  
at any rate  
at no rate  
at first  
at large  
at last  
at least  
at most

y también  
y ... también  
de cualquier modo, de todos modos  
aparte de  
etcétera, y así sucesivamente  
y así sucesivamente  
además de esto  
desprendiéndose de esto  
como, tal como, a medida que, cuando  
como consecuencia  
como último punto  
como cosa común o corriente, de hecho  
en realidad, de hecho  
comparado con  
por ejemplo  
en su totalidad  
hasta, tan lejos como  
en lo que concierne a  
como sigue  
a partir de  
como si, como  
en cuanto a, referente a, en lo que respecta a  
tan ... como  
aparte (de)  
tan recientemente como, apenas, no más  
mientras, siempre que  
tantos como  
tan, tanto  
tanto como, tanto cuanto  
en cuanto a, en lo que se refiere a  
tan pronto como, luego que  
cuanto antes

como tal  
en lo que respecta a  
asumiendo que  
como si  
también, además, del mismo modo  
así como, también como, lo mismo que  
en cuanto a, en lo que refiere a  
aún, todavía, hasta ahora  
del todo, en absoluto  
de todos modos, de cualquier modo  
de ninguna manera  
al principio, inicialmente  
extensamente, en general  
por último, finalmente  
por lo menos  
a lo sumo, cuanto más

|                  |                                            |
|------------------|--------------------------------------------|
| at no rate       | de ninguna manera                          |
| at once          | de inmediato, de una vez                   |
| at present       | en la actualidad                           |
| at random        | al azar                                    |
| at stake         | en juego                                   |
| at the same time | al mismo tiempo                            |
| at this point    | en este punto, aquí                        |
| at this moment   | en este momento                            |
| at times         | a veces                                    |
| at the rate of   | a razón de                                 |
| at the same time | al mismo tiempo                            |
| at will          | a voluntad                                 |
| away from        | lejos de                                   |
| a while after    | poco después, rato más tarde               |
| a while ago      | hace un rato, recién                       |
| <b>because</b>   | porque                                     |
| because of       | debido a, a causa de                       |
| because of this  | por esto,                                  |
| before           | adelante, adelante de, al frente, antes de |
| before that      | antes que eso,                             |
| being...         | siendo, estando                            |
| besides          | además (de), también                       |
| beyond doubt     | sin duda alguna                            |
| beyond that      | más allá de eso, aparte de eso             |
| both             | ambos, los dos                             |
| both...and       | ambos, tanto... así como..                 |
| but              | pero, sino, excepto, salvo                 |
| but yet          | pero aún/ aún así                          |
| but then         | pero entonces                              |
| by and large     | de manera general                          |
| by any means     | de cualquier modo                          |
| by all means     | sin duda, sin falta, por todos los medios  |
| by chance        | por casualidad                             |
| by contrast      | en oposición a esto, del modo contrario    |
| by far           | con mucho, por mucho, lejos                |
| <br>             |                                            |
| by itself        | por sí mismo                               |
| by means of      | por medio de                               |
| by no means      | de ningún modo, de ninguna manera          |
| by now           | ahora                                      |
| by then          | para entonces                              |
| by the way       | de paso, a propósito                       |
| by this time     | para entonces                              |
| by way of        | por la vía de, pasando por, por medio de   |
| <br>             |                                            |
| concerning       | en lo que respecta a, concerniente a,      |
| consequently     | en consecuencia                            |

|                       |                                      |
|-----------------------|--------------------------------------|
| considering that      | considerando que                     |
| conversely            | a la inversa                         |
| currently             | en el presente, en la actualidad     |
| despite               | a pesar de                           |
| despite this          | a pesar de esto                      |
| due to                | debido a, a causa de                 |
| during                | durante                              |
| each other            | recíprocamente                       |
| earlier               | más temprano, anteriormente          |
| e.g.                  | por ejemplo, tal como                |
| either                | cualquiera, uno u otro               |
| either ... or         | o ... o / o bien... o                |
| either way            | de cualquier modo                    |
| else                  | otro más, además                     |
| equally               | del mismo modo                       |
| equally important     | igualmente importante,               |
| even                  | aún, incluso, siquiera               |
| even so               | a pesar de eso                       |
| even though           | incluso cuando, si bien              |
| eventually            | al final, finalmente                 |
| even when             | aún cuando                           |
| except                | excepto, a excepción de, salvo       |
| except that           | excepto que, excepto por             |
| finally               | finalmente, para finalizar           |
| first                 | primero, ante todo, en primer lugar  |
| firstly               | primeramente                         |
| first of all          | ante todo, en primer lugar           |
| finally               | finalmente                           |
| following from this   | siguiendo de esto, como consecuencia |
| for                   | dado que, porque, puesto que         |
| for a while           | por algún tiempo, por un rato        |
| for example           | por ejemplo                          |
| for instance          | por ejemplo, verbigracia             |
| for all that          | por todo eso                         |
| forever               | para siempre                         |
| former / the former   | el anterior, lo mencionado primero   |
| for that /this reason | por esa razón                        |
| for the most part     | en su mayor parte, principalmente    |
| for the sake of       | con el objeto de                     |
| for ever              | para siempre                         |
| from                  | desde                                |
| from time to time     | de vez en cuando                     |
| further               | más allá, en adición, además         |
| furthermore           | ulterior, más aún                    |

given that  
granting that

dado que  
concediendo que

hardly  
hardly ever  
hence  
here  
however

escasamente, casi nunca  
casi nunca  
de aquí (que), por lo tanto  
aquí,  
sin embargo, no obstante, de cualquier modo

i.e.  
if  
incidentally  
inside  
instead  
if any  
if so  
immediately  
immediately following  
in addition to  
in advance  
in as much as  
in between  
in brief  
in case  
in closing  
in comparison with  
in conclusion  
indeed  
in due course  
in due time  
in effect  
in either case  
in exchange for  
in fact  
in order to  
in order that  
in order to  
in short  
in a word  
in so far as  
in some measure  
in spite of  
in such an event  
instead of  
in that case  
in the event of  
in the long run

o sea, esto es  
si (introduce condición)  
a propósito, entre paréntesis, de paso  
adentro, interior, del lado de adentro, dentro de  
en cambio, en lugar de  
si las hay, si los hay  
si así son las cosas  
inmediatamente  
inmediatamente a continuación  
además de  
de antemano, por adelantado  
en tanto, en cuanto  
entre  
para resumir  
en caso de que, por si acaso  
para concluir  
comparado con  
en conclusión  
efectivamente  
debidamente, a su debido tiempo  
a su debido tiempo  
en efecto  
en cualquier caso  
a cambio de  
en efecto, de hecho  
con el objeto de, a fin de, para  
para, con el objeto de  
para, con el objeto de  
en suma, en una palabra  
en suma, en una palabra  
en lo que respecta a  
en cierto modo, hasta cierto punto  
a pesar de, no obstante  
bajo tales circunstancias  
en vez de, en lugar de  
en ese caso  
en caso de que  
a la larga, a largo plazo

|                      |                                                   |
|----------------------|---------------------------------------------------|
| in the meantime      | mientras tanto, en el interín                     |
| in the middle of     | en medio de                                       |
| in the second place  | en segundo lugar                                  |
| in the same way      | del mismo modo                                    |
| in this way          | de este modo, de esta manera                      |
| in turn              | a su turno, a su vez, en cambio                   |
| in view of the above | considerando lo ya dicho, en vista de lo anterior |
| is/are referred to   | se refiere a                                      |
| it follows that      | se entiende que, se desprende que                 |
| <b>just</b>          | recién, ya, simplemente                           |
| just about           | aproximadamente                                   |
| just as              | al momento que, lo mismo que                      |
| just as if           | lo mismo que si                                   |
| just before          | justo antes                                       |
| just in case         | por si acaso                                      |
| <b>last</b>          | por último, finalmente                            |
| last but not least   | último en orden pero no en importancia            |
| last but one         | penúltimo                                         |
| last but two         | antepenúltimo                                     |
| lastly               | por último, finalmente                            |
| later                | más tarde                                         |
| latter/the latter    | el último mencionado, el último                   |
| leaving that aside   | dejando eso de lado                               |
| like                 | como, tal como, similar a                         |
| likewise             | asimismo, igualmente, además                      |
| long ago             | hace tiempo                                       |
| <b>meanwhile</b>     | mientras tanto                                    |
| more or less         | más o menos                                       |
| moreover             | además, por otra parte                            |
| most likely          | muy probablemente                                 |
| most of              | la mayoría de                                     |
| most of all          | sobre todo                                        |
| <b>namely</b>        | o sea, especialmente                              |
| near                 | cerca, junto a, casi cercano                      |
| nearly               | aproximadamente                                   |
| neither              | ningún, ninguno                                   |
| neither ... nor ...  | ni ... ni ... tampoco                             |
| never                | nunca                                             |
| never mind           | no importa                                        |
| nevertheless         | sin embargo                                       |
| next                 | luego, el siguiente, a continuación, el próximo   |
| next day             | al día siguiente                                  |
| next time            | la próxima vez                                    |
| no less than         | no menos que, no inferior a                       |

no longer  
no matter  
no matter what  
nor  
not only ... but also  
not at all  
notwithstanding  
now

nowadays  
now and again  
now and then  
now that  
now then

of a sudden  
of course  
often  
on account  
on account of  
on an average  
on another occasion  
on a previous occasion  
on a sudden  
on behalf (of)  
once  
once and again  
once and for all  
once more  
on duty  
on guard  
only  
on purpose  
on time  
on that score  
on the contrary  
on the grand scale  
on the one hand  
on the other hand  
on the contrary  
on the score of  
on that account  
on top of  
on top  
or  
or else  
otherwise

no más, ya no más  
no importa  
no importa lo que sea  
ni, tampoco  
no sólo ... sino también  
en absoluto  
a pesar de (que)  
ahora, en la actualidad. O continuativo

hoy en día  
de vez en cuando  
de vez en cuando  
ahora que  
y bien, pues bien

de repente  
por supuesto (continuativo)  
frecuentemente, a menudo  
a cuenta  
debido a, a causa de  
por término medio, en promedio  
en otra ocasión  
anteriormente, en una ocasión anterior  
de repente  
por/a favor de, en representación de, de parte de  
una vez que, cuando, anteriormente  
una y otra vez, varias veces  
de una vez por todas  
una vez más  
en servicio, de guardia  
alerta, de guardia  
solo, solamente,  
a propósito, adrede  
a tiempo  
en cuanto a eso, a ese respecto  
por el contrario, antes bien  
a gran escala  
por un lado  
por otro lado, en cambio  
por el contrario  
con motivo de  
por eso  
encima de, sobre  
con éxito, arriba  
o, u  
o tal vez, o también, o  
de lo contrario, de otro modo

|                         |                                                  |
|-------------------------|--------------------------------------------------|
| out of date             | sin actualizar                                   |
| out of order            | fuera de funcionamiento                          |
| outside                 | fuera (de), a excepción de,                      |
| over                    | sobre, por encima de, durante, al otro lado      |
| owing to                | debido a, por causa de                           |
| particularly            | especialmente, particularmente                   |
| perhaps                 | tal vez                                          |
| presently               | enseguida                                        |
| previously              | anteriormente, previamente                       |
| provided that           | dado que, en la medida en que                    |
| providing that          | siempre que, con tal que                         |
| rather than             | más bien que, en vez de                          |
| recently                | recientemente                                    |
| regarding               | con respecto a, en cuanto a                      |
| regardless of           | a pesar de, independientemente de                |
| save that               | excepto por                                      |
| second                  | en segundo lugar                                 |
| seeing that             | viendo que                                       |
| seldom                  | rara vez                                         |
| similarly               | del mismo modo                                   |
| since                   | desde entonces, ya que, puesto que, a partir de, |
| so                      | pues, por lo tanto, así, de este modo, entonces  |
| so as to                | para, a fin de, de modo tal que                  |
| so far                  | hasta ahora, hasta aquí                          |
| so far as               | en lo que respecta a                             |
| so long as              | con tal de que, siempre que                      |
| so much the better      | tanto mejor                                      |
| so that                 | de manera que, de modo tal que                   |
| sometime                | alguna vez                                       |
| sometimes               | a veces                                          |
| soon                    | pronto, prontamente                              |
| soon after              | poco después                                     |
| sooner or later         | tarde o temprano                                 |
| sooner that             | antes que                                        |
| so that                 | para, a fin de que                               |
| so then                 | así pues, por tanto                              |
| so to speak             | por así decirlo                                  |
| specifically            | específicamente                                  |
| still                   | sin embargo, no obstante, todavía, aún           |
| subject to              | sujeto a                                         |
| subsequently            | subsiguientemente, a continuación                |
| such                    | tal, semejante                                   |
| such a                  | tan                                              |
| such and such           | tal y tal, tales y tales                         |
| such not being the case | no siendo ese el caso                            |

such that  
such as  
supposing that  
surely

than  
that  
that being the case  
that is  
that is to say  
that is why  
then  
the other way about/around  
there  
therefore  
thereby  
this is to say  
this time  
though  
through  
throughout

the sooner the better  
this holds true  
this way  
thus  
thus far  
till  
to the last  
to a certain extent  
to a great extent  
to begin with  
to conclude  
together with  
to sum up  
to summarize  
to the full extent  
together  
together with  
to return to the point  
to this end

under no circumstances  
underneath  
unless  
until  
until then  
up

tal que  
tal como  
suponiendo que  
seguramente

que  
esto, eso, que, todo eso,  
siendo ese el caso, así las cosas  
o sea  
es decir  
por eso es que  
entonces, luego, por eso  
al contrario, al revés  
allí,  
por lo tanto, en consecuencia  
con eso, por eso  
es decir  
esta vez  
aunque, aún cuando  
a través de, por  
por todo, en todo, de principio a fin

cuanto antes mejor  
esto también es cierto, se mantiene  
por aquí, de este modo, así  
así, de este modo, por lo tanto  
hasta ahora, hasta aquí  
hasta  
hasta el fin, hasta lo último  
hasta cierto punto  
en gran medida  
para empezar  
para terminar  
junto con  
en suma, en una palabra  
para resumir  
en toda su extensión, completamente  
junto, junto a  
junto con  
para volver al tema  
para esto

bajo ninguna circunstancia  
debajo (de), bajo, por debajo  
a menos que, a no ser que  
hasta  
hasta entonces  
hacia arriba, de subida, ascendente

|                     |                                             |
|---------------------|---------------------------------------------|
| upon this/that      | por sobre eso, encima de eso, además        |
| up till that time   | haste ese momento                           |
| <b>viz</b>          | a saber, es decir                           |
| <b>well</b>         | bien, (continuativo)                        |
| what is more        | lo que es más, también                      |
| whatever            | cualquier cosa que, todo lo que             |
| when                | cuando                                      |
| whenever            | cuando quiera que, en cualquier momento     |
| where               | donde                                       |
| wherever            | donde sea que, en cualquier lugar que       |
| whereas             | mientras que, puesto que                    |
| whether             | si, ya sea que,                             |
| whether...or        | ya sea que... o que                         |
| whichever way       | de todos modos                              |
| whichever way it is | de cualquier manera que sea                 |
| while               | mientras, en tanto que                      |
| with regard to      | con respecto a, en cuanto a                 |
| with the aim of     | con el objeto de                            |
| with this in mind   | teniendo esto en cuenta, con esto en mente, |
| without             | sin                                         |

**yet** aún, a pesar de eso, todavía, sin embargo

Albert Einstein (1879–1955). *Relativity: The Special and General Theory*. 1920.

## **V. The Principle of Relativity (In the Restricted Sense)**

In order to attain the greatest possible clearness, let us return to our example of the railway carriage that was travelling uniformly. We call its motion a uniform translation (“uniform” because it is of constant velocity and direction, “translation” because although the carriage changes its position relative to the embankment, it does not rotate). Let us imagine a raven flying through the air in such a manner that its motion observed from the embankment is uniform and in a straight line. If we observe the flying raven from the moving railway carriage, we will find that the motion of the raven would be one of different velocity and direction, but that it would still be uniform and in a straight line. If we want to express this in an abstract manner, we may say: If a mass  $m$  is moving uniformly in a straight line with respect to a co-ordinate system  $K$ , then it will also be moving uniformly and in a straight line relative to a second co-ordinate system  $K'$ , provided that the latter is executing a uniform translatory motion with respect to  $K$ . In accordance with the discussion contained in the preceding section, it follows that:

If  $K$  is a Galileian co-ordinate system, then every other co-ordinate system  $K'$  is a Galileian one, when, in relation to  $K$ , it is in a condition of uniform motion of translation. Relative to  $K'$  the mechanical laws of Galilei-Newton hold good exactly as they do with respect to  $K$ .

We advance a step farther in our generalization, when we express the tenet thus: If, relative to  $K$ ,  $K'$  is a uniformly moving co-ordinate system devoid of

rotation, then natural phenomena run their course with respect to  $K'$  according to exactly the same general laws as with respect to  $K$ . This statement is called the *principle of relativity* (in the restricted sense).

As long as one was convinced that all natural phenomena were capable of representation with the help of classical mechanics, there was no need to doubt the validity of this principle of relativity. But in view of the more recent development of electrodynamics and optics, it became more and more evident that classical mechanics affords an insufficient foundation for the physical description of all natural phenomena. At this point, the question of the validity of the principle of relativity became ripe for discussion, and it did not appear impossible that the answer to this question might be in the negative.

| CUANTIFICADORES                                            |                                                              |
|------------------------------------------------------------|--------------------------------------------------------------|
| <b>any (en oraciones afirmativas)</b>                      | cualquiera ( no importa cual)                                |
| <b>any (en oraciones interrogativas y negativas)</b>       | algo de, algún/ a, ningún/a                                  |
| <b>both</b>                                                | ambos, los dos, tanto...como...( a veces no se traduce)      |
| <b>every</b>                                               | todos, cada                                                  |
| <b>first</b>                                               | primero/primer... /por primera vez(cuando acompaña al verbo) |
| <b>neither</b>                                             | ninguno, ninguno de los dos                                  |
| <b>no</b>                                                  | ninguno-a, nada de...                                        |
| <b>rather</b>                                              | algo, bastante                                               |
| <b>(cantidad) out of (cantidad) three out of every 10)</b> | (tres) de cada (10)                                          |
| <b>(cantidad) as much ...as / as many... as</b>            | (cantidad) veces más que...                                  |
| INTENSIFICADORES                                           |                                                              |
| <b>even</b>                                                | aún, incluso                                                 |
| <b>far</b>                                                 | lejos, distante, mucho más (intensificador)                  |
| <b>further</b>                                             | extra, ulterior, adicional, nuevo                            |
| <b>too</b>                                                 | demasiado (delante de un sustantivo)                         |
| <b>rather than</b>                                         | antes que, más bien que, más que, en lugar de                |
| SUSTANTIVOS                                                |                                                              |
| <b>time</b>                                                | tiempo/ vez/ hora, sincronizar (v)                           |
| <b>way</b>                                                 | manera, modo , camino                                        |
| <b>oil</b>                                                 | petróleo o aceite                                            |
| PRESPOSICIONES                                             |                                                              |
| <b>for</b>                                                 | para (rara vez se traduce <i>por</i> )                       |
| <b>up to</b>                                               | hasta                                                        |
| <b>Down to</b>                                             | hasta                                                        |
| <b>within</b>                                              | dentro, dentro de,                                           |
| <b>without</b>                                             | sin                                                          |

|                                                       |                                                                               |
|-------------------------------------------------------|-------------------------------------------------------------------------------|
| <b>actually (adv) ,/ actual (adj)</b>                 | en realidad, /real                                                            |
| <b>as (comparativo, temporal, causa-consecuencia)</b> | como, a medida que, mientras, cuando, dado que, porque                        |
| <b>as...as</b>                                        | tan...como                                                                    |
| <b>as long as</b>                                     | con tal de que, siempre que                                                   |
| <b>As many ...as</b>                                  | Tantos como                                                                   |
| <b>As much ...as</b>                                  | Tanto...como - hasta                                                          |
| <b>because /</b>                                      | porque (+ oración)                                                            |
| <b>because of</b>                                     | debido a (+ sustantivo)                                                       |
| <b>but for</b>                                        | de no haber sido por.../                                                      |
| <b>currently (adv) / current (adj)</b>                | actualmente / actual, de actualidad                                           |
| <b>due to</b>                                         | debido a, a causa de                                                          |
| <b>either ... or</b>                                  | ya sea... o .../ o...o/cualquiera de los dos/                                 |
| <b>for</b>                                            | para/ porque/ debido a / pues / puesto que                                    |
| <b>too</b>                                            | también.                                                                      |
| <b>ever</b>                                           | siempre, nunca (si el verbo es negativo) , si es sólo enfático, no se traduce |
| <b>likely</b>                                         | posible, posiblemente                                                         |
| <b>no longer</b>                                      | ya no                                                                         |
| <b>not (only)...but (also)</b>                        | no sólo / no solamente... sino también                                        |
| <b>other than</b>                                     | salvo, excepto, aparte de, que no sea                                         |
| <b>owing to</b>                                       | debido a, a causa de                                                          |
| <b>rather than</b>                                    | antes que, más bien que, más que, en lugar de                                 |
| <b>so that,</b>                                       | de modo tal que,                                                              |
| <b>/ so...that</b>                                    | / tan...que                                                                   |
| <b>unlike</b>                                         | distinto de , diferente, diferente de, a diferencia de..                      |
| <b>what</b>                                           | que, <b>lo que</b>                                                            |
| <b>VERBOS</b>                                         |                                                                               |
| <b>be likely to</b>                                   | ser posible que                                                               |
| <b>fail to (v)</b>                                    | no                                                                            |
| <b>close (v) (prep) (adj)</b>                         | cerrar/ cerca, al lado de, / estricto, minucioso                              |
| <b>look for/check for/ investigate for</b>            | en busca de, para comprobar,                                                  |
| <b>operate</b>                                        | funcionar                                                                     |
| <b>provide for</b>                                    | proporcionar, dar                                                             |
| <b>substitute for (substitute A for B)</b>            | reemplazar, suplir (substituir B por A)                                       |
| <b>time (v)</b>                                       | sincronizar                                                                   |
| <b>even (v)</b>                                       | emparejar, alisar, igualar // equilibrado, parejo, llano, igual (adj)         |
| <b>SUSTANTIVOS Y ADJETIVOS USADOS</b>                 | <b>COMO VERBOS</b>                                                            |
| <b>Blanket</b>                                        |                                                                               |
| <b>Bracket</b>                                        |                                                                               |
| <b>Bridge</b>                                         |                                                                               |
| <b>Chair</b>                                          |                                                                               |

|          |  |
|----------|--|
| Coat     |  |
| Dwarf    |  |
| Engineer |  |
| even     |  |
| Face     |  |
| Fork     |  |
| Fuel     |  |
| House    |  |

Nevertheless, there are two general facts which, at the outset, speak very much in favour of the validity of the principle of relativity. Even though classical mechanics does not supply us with a sufficiently broad basis for the theoretical presentation of all physical phenomena, still we must grant it a considerable measure of “truth,” since it supplies us with the actual motions of the heavenly bodies with a delicacy of detail little short of wonderful. The principle of relativity must therefore apply with great accuracy in the domain of *mechanics*.  
(...)

#### ALGUNAS EXPRESIONES CRÍTICAS PARA LA TRADUCCIÓN

- Hay palabras y grupos de palabras en inglés que necesitan una traducción especial, no literal, para que el significado sea realmente equivalente al español.
- Este grupo al que llamamos de “expresiones críticas” incluye sustantivos, adjetivos, verbos comunes, verbos preposicionales, verbos con partícula adverbial, y conectores.
- La lista que sigue incluye sólo las expresiones de aparición más frecuente, y sólo algunos conectores, ya que los restantes se pueden consultar en el *Listado de conectores*.
- Además, se debe tener en cuenta que muchos **sustantivos y adjetivos son usados como verbos** en inglés, por lo tanto debe considerarse la función gramatical de la palabra antes de realizar la búsqueda en el diccionario. En muchas ocasiones ambas funciones, sustantivo y verbo (*s, n, ó v, vt, v intr, tr, intr.*) aparecen en el diccionario, pero cuando esto no ocurre, debe transformarse el significado que da el diccionario en la palabra con la función deseada.

|       |  |
|-------|--|
| Image |  |
| Jet   |  |
| level |  |
| lower |  |
| power |  |

|          |  |
|----------|--|
| Sandwich |  |
| School   |  |
| Shape    |  |
| smooth   |  |
| Sort     |  |
| Square   |  |
| Tailor   |  |
| Time     |  |
| Total    |  |
| Tune     |  |
| Update   |  |

1. The machine will operate properly **as long as** the maintenance is kept.
2. The method is **no longer** used in industry.
3. The above instructions **no longer** apply in this case.
4. When solids plug the discharge port of a desilter, that desilter no longer removes solids.
5. Tubes made of usual materials **other than** glass do not break when first bent.
6. The joint is considered unsafe for **other than** very low pressure.
7. Interrupts are one of the most important ways that things are caused to happen in a PC **other than** by direct action of the CPU.
8. They predict a steady **rather than** a spectacular growth in this industry.
9. This operation is rather difficult to perform. (cuantificador del adjetivo)
10. This is not a complicated process; **rather**, it is easy to understand and simple to use. (conector)
11. There are, however a number of differences between one system and the other **owing to** their type and the environment in which they operate.
12. **But for** the widespread use of chemicals, the factory would't have closed. (conditional)
13. Water quality was poor **because of** high turbidity.
14. Water quality was poor **because** it was very turbid.
15. The mixture reacted **as** boiling oil. (conjunción comparativa)
16. The reaction appeared **as** one substance began to dissolve.
17. **As** the reaction was not the one expected, the experiment was repeated.
18. The problem was complicated, **so that** it was useless to insist.
19. The problem was **so** complicated **that** we decided to use a different device.
20. The cause of the accident was difficult to determine, **too**. (conector)
21. The cause of the accident was too difficult to determine. (intensificador del adjetivo)
22. This condition is important **for** a correct welding operation.
23. The material must be **checked for** possible defects.

24. Lubricated metal parts wear slowly, **for** a film of the lubricant protects them all the time.
25. The device must be **checked for** humidity every other day.
26. Check for holes in screens. Wash screens during a connection for this examination.
27. The instrument might be damaged if you **fail to** observe the above instructions.
28. The new device **has failed to** reduce the flow and transfer of heat.
29. The problem with this equation is that it **fails to account for** other rheological variables.
30. Other forms of energy must be **substituted for** oil in the near future.
31. Democracy is the **substitution** of ballots **for** bullets.
32. Engineers will **substitute** a new metal structure **for** the old wooden frame.
33. An adequate wedge should be inserted **to even up** surfaces.
34. His statement about oil production **does not square** with the facts.
35. The huge equipment was housed to prevent rusting.
36. The insulation material is **sandwiched** between two steel sheets.
37. A layer of carbon monoxide from the extinguisher **blankets** the flames.
38. The engine **is powered** by fuel.
39. **Coat** the case with lubricant.
40. The road **forks** into a central section and two ramps.
41. The mechanism **was timed** to operate at the proper moment.
42. These additives show ability **to lower** resin costs.
43. You **can tailor** your voltage starter to your needs.
44. The result **is likely to be** zero.
45. Make certain that the components of the screen tensioning system, including **any** rubber supports, nuts, bolts, springs, etc., are in place and in good shape.
46. For **any** particular shale shaker, the size and shape of the screen openings have a great effect on solids removal. This means that the performance of **any** shaker is largely controlled by the screen cloth used.
47. You will find the fire extinguisher **close to** the door. (preposición de lugar)
48. Be sure to **close** the door behind you.(verbo)
49. They should make a **close** inspection of the area. (adjetivo)
50. The new engine was four **times as efficient as** the old one.
51. Although they become colloidal, they are still **1000 times larger** than bentonite platelets.
52. Conductivity. Measure of the quantity of electricity transferred across unit area per unit potential **per unit time**.
53. When linear motion shale shakers were introduced into oil well drilling operations, drilling fluid could routinely be sieved through API 200 screens for the first **time**.
54. This car costs **twice as much as** the other one.

55. Today, there are **three times as many** new industries **as** at the end of the last century.
56. Our company has **half as much** capital as our competitors.
57. The action inside the hydrocyclone can multiply gravitational force by **as much as 200 times**.
58. Eight **out of every** ten glass factory workers suffer from this disease.
59. You will also find that some texts say that you should have at least **twice as much** swap **as** physical RAM.
60. Each entry in this table **not only** contains the file's physical location on this disk, **but** the owner of the file, the access permissions, and the number of links, **as well as** many other things.
61. **Not only** does it prevent achieving a good drilling rate, **but** it **also** affects hole cleaning.
62. **Rather than** tying everything up, the program waits until the next key is pressed.
63. **Rather than** using binary to represent numbers in computer programs, another base, hexadecimal is usually used.
64. Particle size has a significant effect on **both** solids and liquid capacity.
65. **Both** designs have advantages and disadvantages.
66. This applies to **both** land and offshore rigs.
67. In warm climates, where moisture conditions are kept reasonable (**neither** flooded **nor** dry), biodegradation rates are very rapid.
68. **Neither** the motor mounting **nor** the mechanical coupling should exhibit signs of wear.
69. However, **neither** of these models has been widely adopted by the drilling-fluid community.
70. This effect can be reduced by making the mud **either** more inhibitive **or** less inhibitive so as to reduce the hydrational and adhesive forces.
71. Elevated temperatures can also destroy direct and invert-emulsion systems and can cause gelation in clay-based muds, **either of which** can negatively affect equipment performance.
72. There should be very little or **no** material on the rig that falls into the reactive/oxidizer category.
73. A 9.2-ppg drilling fluid with **no** barite and 2.6 specific-gravity low-gravity solids would have 6.5% volume of solids.
74. The desander, **as well as** the desilter, needs to be downstream of the degasser operation.
75. Plastic viscosity is important but yield and gel strengths can have a significant impact **as well**.
76. Crews need to be alert to torn screens no matter **what** shaker is used.
77. *Blow Out Control and **What** You Need to Know About It.* (title)
78. Think about **what** effect the piping will have on the flow patterns within the compartment.
79. The manufacturer states that the use of this type of nozzle will increase the amount of fluid moved by up to four times **what** is delivered to the orifice.

80. It depends on **what** is most important for your drilling operation.

#### Lubrication

The actuators are factory lubricated for the life of the actuator in normal working conditions. The standard lubricant is suitable for use **from**  $-40^{\circ}\text{C}$  ( $-40^{\circ}\text{F}$ ) **to**  $+80^{\circ}\text{C}$  ( $+176^{\circ}\text{F}$ ).

#### Construction

Puretorq Vane Rotary actuator design is suitable for **both** indoor and outdoor installations.

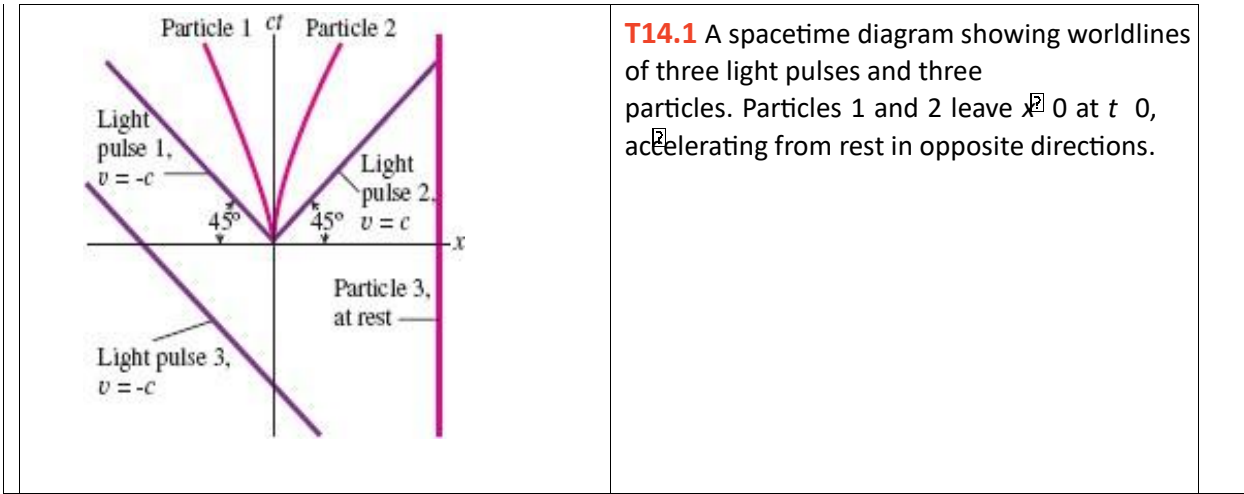
*Encontrar en el texto que sigue las siguientes dificultades gramaticales, subrayarlas y traducirlas.*

|                                                                     |  |
|---------------------------------------------------------------------|--|
| 1. "Make" causativo<br>(make sth do sth)                            |  |
| 2. Comparativo de inferioridad                                      |  |
| 3. not only... but (also)<br>(with inversion)                       |  |
| 4. be+adj+to infinitive                                             |  |
| 5. both                                                             |  |
| 6. provide sb/sth with sth                                          |  |
| 7. rather than                                                      |  |
| 5. conectores: and, so, such..., so that, for..., thus, since, that |  |

### Topic 14 | Spacetime Diagrams

Graphical representations can make kinematic concepts be less abstract and also give useful information. For example, not only does a  $v$ - $t$  graph for one-dimensional motion show the velocity at any instant, but its slopes give accelerations, and areas under it give displacements. For relativity the transformations  $y^0$   $y$  and  $z^0$   $z$  are easy to understand, so we'll just consider the  $x^0$  directions.

The usual convention in relativity is to graph  $ct$  on the vertical axis and  $x$  on the horizontal axis. Such a graph provides us with a **spacetime diagram**. We use  $ct$  rather than  $t$  so that both scales can have the same unit and the same scale. The path of a particle forms a line, called its **worldline**, as the particle moves in onedimensional motion. At any point, the slope of the worldline is  $d(ct)/dx$   $(c dt)/(v dt)$   $c/v$ . Thus a light pulse with  $v=c$  has a slope of 1 on a spacetime diagram, giving angles of  $45^{\circ}$  with the  $x$ - axes. Since material particles have speeds less than  $c$ , all worldlines for material particles are steeper than those  $45^{\circ}$  angles. That is, nothing known has a worldline with a slope between 1 and 1. The worldline of a particle at rest is vertical and so has infinite slope. Figure T14.1 shows six worldlines, three of light pulses and three of particles. Can you show that these six worldlines agree with the statements made in this paragraph about their slopes?



Encontrar en el texto ejemplos de las siguientes dificultades gramaticales, subrayarlas y traducirlas.

|                       |  |
|-----------------------|--|
| 1. most               |  |
| 2. elipsis            |  |
| 3.subjuntivo          |  |
| 4. -ing               |  |
| 5. "It" introductorio |  |
| 6. voz pasiva         |  |
| 7. as                 |  |
| 8. condicional II     |  |
| 9. not only but also  |  |
| 10. not...but         |  |

## Coax Cable

Because a coax cable is most commonly referred to as an *RF* (radiofrequency) *transmission line*, most people associate the use of coax cables with high frequencies. However, this is certainly not the case, as evidenced by medical technology that deals with static dc levels and low-voltage (in microvolts or millivolts), “slow” (less than 5 Hz) ac. In general, coax cables should be used wherever there is a need to ensure that the transmitted signal is undisturbed by any surrounding noise.

Coax cables are acceptable for the full range of frequencies from 0 Hz to a few hundred gigahertz, with sound frequencies extending from about 15 Hz to 20 kHz, radio frequencies from 20 kHz to 300 MHz, and microwave frequencies from 300 MHz to 300 GHz. Our discussion thus far has centered on protecting the transmitted signal from external noise. It is important to realize also that when a coax cable is used, it will not act as a transmitter for the signal that it is carrying. This fact is very important as we hook up electronic appliances such as VCRs to our TVs. If we simply used a twin lead wire between the VCR and TV, not only would the wire pick up signals by acting like an antenna, but it would also transmit channel 3 (or 4) to the surrounding medium which would affect not only your TV’s response but also that of any other TV or receiver in the area.

For the coupling between the systems in which coax cable is typically used, it is not the level of voltage or current that is the primary concern but whether there is a good “match” between components and the cable.

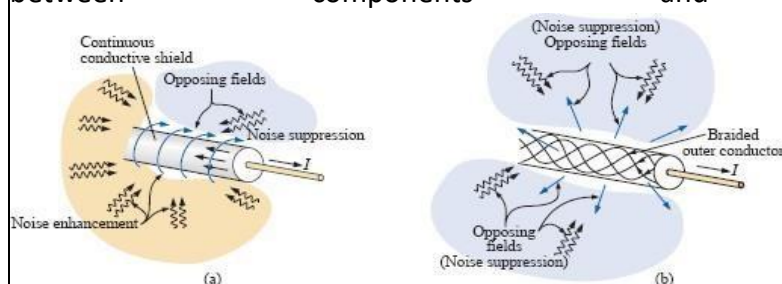


FIG. 16.24

Shielding: (a) solid outside inductor; (b) braided outside conductor.

## SELECCIÓN DE TEXTOS

### ELECTROMECHANICAL ENERGY CONVERSION

From the material developed thus far, it should be apparent that electromagnetomechanical devices are capable of converting mechanical forces and displacements to electromagnetic energy, and that the converse is also possible. The objective of this section is to formalize the basic principles of energy conversion in electromagnetomechanical systems, and to illustrate its usefulness and potential for application by presenting several examples of **energy transducers**. A transducer is a device that can convert electrical to mechanical energy (in this case, it is often called an **actuator**), or vice versa (in which case it is called a **sensor**).

Several physical mechanisms permit conversion of electrical to mechanical energy and back, the principal phenomena being the **piezoelectric effect**,<sup>3</sup> consisting of the generation of a change in electric field in the presence of strain in certain crystals (e.g., quartz), and **electrostriction** and **magnetostriction**, in which changes in the dimension of certain materials lead to a change in their electrical or magnetic) properties. Although these effects

lead to many interesting applications, this chapter is concerned only with transducers in which electrical energy is converted to mechanical energy through the coupling of a magnetic field. It is important to note that all rotating machines (motors and generators) fit the basic definition of electromechanical transducers we have just given.

### Forces in Magnetic Structures

Mechanical forces can be converted to electrical signals, and vice versa, by means of the **coupling** provided by energy stored in the magnetic field. In this subsection, we discuss the computation of mechanical forces and of the corresponding electromagnetic quantities of interest; these calculations are of great practical importance in the design and application of electromechanical actuators. For example, a problem of interest is the computation of the current required to generate a given force in an electromechanical structure. This is the kind of application **that is likely to** be encountered by the engineer in the selection of an electromechanical device for a given task.

As already seen in this chapter, an electromechanical system includes an electrical system and a mechanical system, **in addition to** means through which the two can interact. The principal focus of this chapter has been the coupling that occurs through an electromagnetic field common to **both** the electrical and the mechanical system; to understand electromechanical energy conversion, it will be important to understand the various energy storage and loss mechanisms in the electromagnetic field. Figure 16.37 illustrates the coupling between the electrical and mechanical systems. In the mechanical system, energy loss can occur because of the heat developed **as a consequence of** friction, **while** in the electrical system, analogous losses are incurred **because of** resistance. Loss mechanisms are also present in the magnetic coupling medium, since *eddy current losses* and *hysteresis losses* are unavoidable in ferromagnetic materials. **Either** system can supply energy, and either system can store energy. Thus, the figure depicts the flow of energy from the electrical to the mechanical system, **accounting for these** various losses. The same flow could be reversed if mechanical energy **were** converted to electrical form.

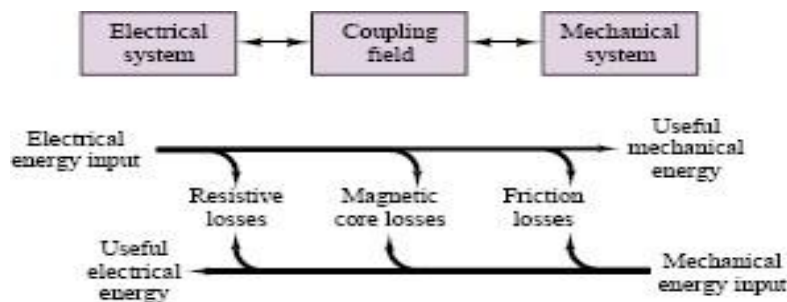


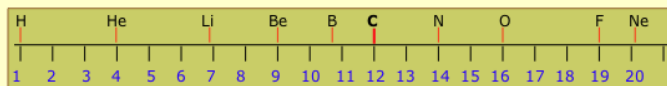
Figure 16.37

### Counting atoms Avogadro's number

**Owing to** their tiny size, atoms and molecules cannot be counted by direct observation. There are, however, a number of indirect methods that **enable us to estimate** the number of these particles in a sample of an element or compound. **Once** this has been done, we know the number of formula units (to use the most general term for any combination of atoms we wish to define) in any arbitrary weight of the substance. The number will of course depend **both** on the formula of the substance and on the weight of the sample. But if we consider a weight of

substance *that is the same as its formula (molecular) weight expressed in grams*, we have only one number to know: **Avogadro's number**,  $6.022137 \times 10^{23}$ , usually designated by  $N_A$ .

You can visualize the atomic weight scale as a long line of numbers that runs from 1 to around 280. The beginning of the scale looks like this:



You will notice that the relative masses of the different elements (shown in the upper part) are not all integers. If the nuclei all differ by integral numbers of protons and neutrons that have virtually identical masses, we would expect the atomic weights to be integers. Some are **very close** to integers (the reason they are not exactly integral will be explained in the next section), but many are nowhere near integral. This puzzling observation eventually led to the concept of *isotopes*.

Aston's first experiments with his newly-invented mass spectrometer in 1919 immediately revealed that most of the elements exist in nature as mixtures of isotopes. For example, the mass spectrum of magnesium shows three isotopes of masses 24 through 26 having the natural abundances shown on the plot.

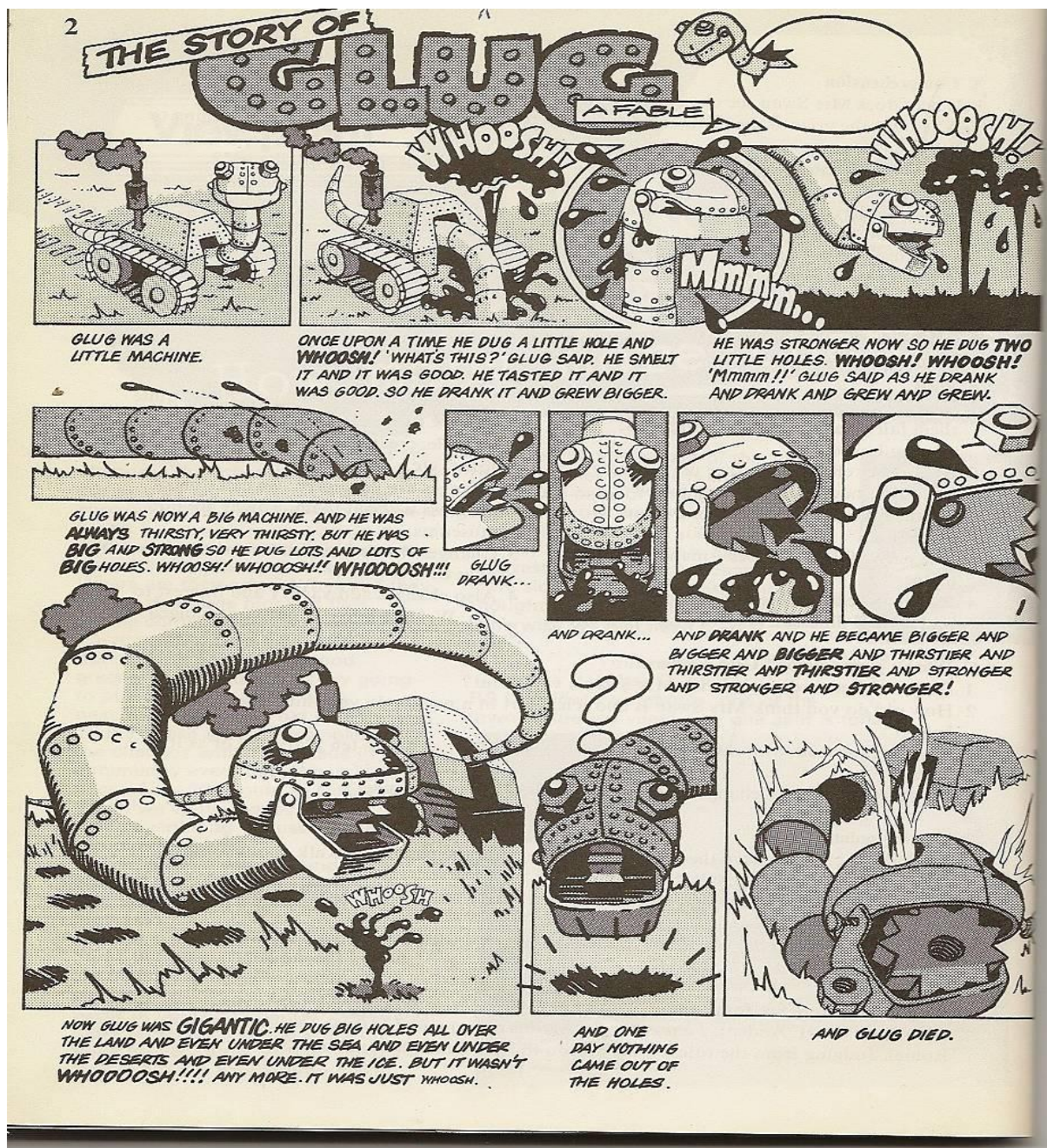
Of the 92 natural elements, 23 have only a single isotope, and are said to be **monoisotopic**.

## Mass spectrometry

An alternative way of examining the behavior of individual atomic particles became evident in 1899, when J.J. Thomson, whose work on "cathode rays" had revealed that the atoms has internal components of its own, showed that the charged particles resulting from their break-up could be deflected by externally-applied magnetic and electrostatic fields. The most significant finding (also made a year earlier by Wilhelm Wien) was that the degree of deflection of a particle is proportional to the ratio of its electric charge to its mass.

Neutral atoms, having no charge, cannot be accelerated along a path so as to form a beam, nor can they be deflected. They can, however, be made to acquire electric charges by directing an electron beam at them, and this was the basis of the first mass spectrometer developed by Thomson's former student F.W. Aston (1877-1945, 1922 Nobel Prize) in 1919. This enabled him to quickly identify 212 of the 287 naturally occurring isotopes.

The mass spectrometer has become one of the most widely used laboratory instruments. Mass spectrometry is now mostly used to identify molecules. Ionization usually breaks a molecule up into ionized fragments having different charge-to-mass ratios, each molecule resulting in a unique "fingerprint" of particles whose origin can be deduced by a jigsaw puzzle-like reconstruction. For many years, "massspec" had been limited to small molecules, but with the development of novel ways of creating ions from molecules, it has now become a major tool for analyzing materials and large biomolecules, including proteins.



| PREFIJOS         | SIGNIFICADO/<br>INTERPRETACION        | EJEMPLO EN<br>INGLES              | EQUIVALENTE CASTELLANO                     |
|------------------|---------------------------------------|-----------------------------------|--------------------------------------------|
| a-<br>ab-<br>an- | -negativo, no, sin<br>-transformar en | atypical<br>afloat<br>asymetrical | atípico a flote,<br>flotante<br>asimétrico |
| aero-            | -aire                                 | aeroplane                         | avión, aeroplano                           |
| after-           | -después                              | aftereffect                       | efecto posterior                           |
| ambi-<br>amphi-  | (de) ambos lados                      | amphibious                        | anfíbio                                    |
| ante-            | anterior<br>contrario                 | antemeridian<br>antedating        | antemeridiano<br>retrotracción             |

|                                         |                                         |                                               |                                                                   |
|-----------------------------------------|-----------------------------------------|-----------------------------------------------|-------------------------------------------------------------------|
| <b>ant-<br/>anti-</b>                   | -contrario/contra                       | antitoxin                                     | antitoxina                                                        |
| <b>arch-</b>                            | -principal                              | archbishop                                    | arzobispo                                                         |
| <b>auto-</b>                            | -auto, por sí mismo, mismo              | autobiography                                 | autobiografía                                                     |
| <b>be-</b>                              | -transformar en                         | become<br>becalm                              | devenir, transformar en<br>sosegar                                |
| <b>bi-</b>                              | -dos                                    | bimetallic                                    | bimetálico                                                        |
| <b>bio-</b>                             | -vida                                   | biology                                       | biología                                                          |
| <b>by-</b>                              | -accesorio, derivado                    | Byproduct by-pass                             | subproducto<br>derivación                                         |
| <b>centi-</b>                           | -100                                    | centimetre/meter                              | centímetro                                                        |
| <b>co- com- con-</b>                    | -con, junto (con)                       | cooperate                                     | cooperar                                                          |
| <b>contra-<br/>contro-<br/>counter-</b> | -contra, contrario, opuesto             | controversy<br>counteract<br>counterclockwise | controversia contrarrestar<br>contrario a las agujas del<br>reloj |
| <b>cross-</b>                           | -a través<br>-al través                 | crosspiece cross-section                      | travesaño sección<br>transversal                                  |
| <b>De-</b>                              | -despojado de, opuesto                  | dehydrated                                    | deshidratado                                                      |
| <b>deci-<br/>deca-</b>                  | --una decena, diez                      | decimetro/meter<br>decasyllable               | decímetro<br>decasílabo                                           |
| <b>di-</b>                              | -dos, dos veces                         | dioxide                                       | dióxido                                                           |
| <b>dia-</b>                             | a través de                             | diameter                                      | diámetro                                                          |
| <b>dis-</b>                             | -no, opuesto, negativo                  | disconnected<br>dismantle                     | desconectado<br>desmantelar                                       |
| <b>e-<br/>en- em-</b>                   | -transformar en                         | elongate<br>enclose                           | alargar<br>encerrar                                               |
| <b>Ex</b>                               | -recíprocamente<br>-exponer al exterior | exchange<br>exhale<br>extract                 | intercambiar<br>exhalar<br>extraer                                |
| <b>extra-</b>                           | -extra                                  | extraterritorial                              | extraterritorial                                                  |
| <b>hemi-</b>                            | -medio                                  | hemisphere                                    | hemisferio                                                        |
| <b>For(e)-</b>                          | -anterior<br>-hacia adelante            | foregoing<br>forecast                         | precedente<br>predecir                                            |
| <b>hetero-</b>                          | -diferente                              | heterogeneous                                 | heterogéneo                                                       |
| <b>hind-</b>                            | -posterior                              | hindbrain<br>hindmost                         | cerebelo<br>postrero, último                                      |
| <b>homo-</b>                            | -mismo                                  | homogeneous                                   | homogéneo                                                         |
| <b>hydro-</b>                           | -agua<br>-hidrógeno                     | hydrology<br>hydrocarbon                      | hidrología<br>hidrocarbón                                         |

|                             |                                       |                            |                                     |
|-----------------------------|---------------------------------------|----------------------------|-------------------------------------|
| <b>hyper-</b>               | -excesivo, extremado                  | hypertension               | hipertensión                        |
| <b>hypo</b>                 | -por debajo, menos de lo usual        | hypotension                | hipotensión                         |
| <b>ill</b>                  | -errónea, mal                         | illmatched<br>illdefined   | desigual, incompatible mal definido |
| <b>im-<br/>in-</b>          | -no<br>-opuesto                       | impossible<br>inaccurate   | imposible<br>inexacto               |
| <b>in-</b>                  | -adentro                              | inborn                     | innato                              |
| <b>infra-</b>               | -debajo de                            | infrared                   | infrarrojo                          |
| <b>inter-</b>               | -entre                                | interaction                | interacción                         |
| <b>intra- intro-</b>        | -dentro                               | intravenous                | intravenoso                         |
| <b>ir-</b>                  | no -opuesto                           | irregular                  | irregular                           |
| <b>iso-</b>                 | -igual                                | isomagnetic                | isomagnético                        |
| <b>kilo-</b>                | -1000                                 | kilogram                   | kilogramo                           |
| <b>macro-</b>               | -grande                               | macromolecule              | macromolécula                       |
| <b>mal- male-<br/>mali-</b> | -mal<br>-negativo                     | malformation<br>malevolent | malformación<br>malevolente         |
| <b>mega-<br/>megalo-</b>    | -muy grande<br>-un millón             | megawatt                   | megavatio                           |
| <b>meta-</b>                | -cambio                               | metamorphic                | metamórfico                         |
| <b>micro-</b>               | -pequeño, en pequeña escala           | microclimate               | microclima                          |
| <b>milli-</b>               | -un milésimo                          | milligram                  | miligramo                           |
| <b>mini-</b>                | -pequeño                              | miniskirt                  | minifalda                           |
| <b>mis-</b>                 | errado, mal                           | miscalculate               | calcular mal                        |
| <b>mono-</b>                | -uno                                  | monoxide                   | monóxido                            |
| <b>multi-</b>               | -muchos                               | multilateral               | multilateral                        |
| <b>neo-</b>                 | -nuevo                                | neolithic                  | neolítico                           |
| <b>non-</b>                 | negativo                              | noneffective<br>nonsense   | ineficaz<br>sin<br>sentido          |
| <b>out-</b>                 | en exceso<br>exterior                 | outmeasure<br>outlying     | medir en exceso<br>extrínseco       |
| <b>over-</b>                | en exceso, demasiado superior, encima | overdose<br>overconfident  | sobredosis<br>demasiado<br>confiado |
| <b>para-</b>                | -similar a                            | parasympathetic            | parasimpático                       |
| <b>peri-</b>                | -alrededor                            | perimeter                  | perímetro                           |
| <b>phono-</b>               | -sonido                               | phonology                  | fonología                           |

|                 |        |             |            |
|-----------------|--------|-------------|------------|
| <b>pent(a)-</b> | -cinco | pentagon    | pentágono  |
| <b>photo-</b>   | -luz   | photography | fotografía |

|                          |                                           |                                |                                                   |
|--------------------------|-------------------------------------------|--------------------------------|---------------------------------------------------|
| <b>poly-</b>             | -muchos                                   | polymorphous                   | polimorfo                                         |
| <b>pre-</b>              | -anterior                                 | prehistory                     | prehistoria                                       |
| <b>pro-</b>              | -del lado de                              | proconsul                      | proconul                                          |
| <b>proto-</b>            | -primero, original                        | prototype                      | prototipo                                         |
| <b>post-</b>             | -después                                  | post-war                       | post guerra                                       |
| <b>pseudo-</b>           | -falso, seudo                             | pseudonymous                   | pseudónimo                                        |
| <b>quadri-</b>           | -cuatro                                   | quadrivalent                   | cuadrivalente                                     |
| <b>re-</b>               | -de nuevo, volver a<br>-junto, mutuamente | recombine<br>e react           | recombinar<br>reaccionar                          |
| <b>self-</b>             | por sí mismo, auto                        | selfgoverning<br>selfpropelled | autónomo con<br>impulso propio                    |
| <b>semi-</b>             | -medio, imperfecto                        | semicircle<br>semiconductor    | semicírculo<br>semiconductor                      |
| <b>sub-</b>              | -debajo de, menos que,<br>sub             | subconscious                   | subconsciente                                     |
| <b>supra-<br/>super-</b> | -por encima<br>-más allá de               | supersonic                     | supersónico                                       |
| <b>sur-</b>              | -sobre                                    | surpass                        | sobrepasar                                        |
| <b>syn/m-</b>            | -con, junto                               | synthesis                      | síntesis                                          |
| <b>tele-</b>             | -distancia                                | television                     | televisión                                        |
| <b>tetra-</b>            | -cuatro                                   | tetrachloride                  | tetracloruro                                      |
| <b>therm(o)-</b>         | -calor                                    | thermometer                    | termómetro                                        |
| <b>trans-</b>            | -a través de, trans                       | transplant                     | transplante                                       |
| <b>tri-</b>              | -tres                                     | triangle                       | triángulo                                         |
| <b>ultra-</b>            | -más allá, más de lo usual                | ultrasonic                     | ultrasónico                                       |
| <b>un-</b>               | no, negativo, contrario                   | uneven<br>unbusinesslike       | desparejo<br>Contrario a la práctica<br>comercial |
| <b>under-</b>            | insuficiente, inferior                    | underdeveloped<br>undersea     | subdesarrollado<br>submarino                      |
| <b>uni-</b>              | -uno                                      | unicellular                    | unicelular                                        |
| <b>vice</b>              | -vice, asistente                          | vece-president                 | vicepresidente                                    |

| SUFIJOS                                                                         | FUNCIÓN                                                                                 | EJEMPLO EN INGLÉS                                                                                    | EQUIV. EN CAST.                                                                                  |
|---------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| <b>-able</b>                                                                    | Adjetivo (que se puede...) Que puede, o es digno de ser...                              | Observe - observable<br>Exchange-exchangeable<br>Rely – reliable<br>Unforgettable<br>unobjectable    | Observar observable<br>Intercambiable<br>Confiar – confiable<br>Inolvidable<br>Inobjetable       |
| <b>-age</b>                                                                     | Sustantivo abstracto (acción de)<br>(cantidad o conjunto de)                            | Break - breakage<br>Assemble<br>assemblage Percent-<br>percentage<br>Short - shortage                | Romper ruptura<br>Montar montaje<br>Porcientoporcentaje<br>Déficit – merma                       |
| <b>-al</b>                                                                      | Sustantivo abstracto (acción de)                                                        | Refuse refusal<br>Arrive - arrival                                                                   | Rechazar rechazo<br>Llegar – llegada                                                             |
| <b>-al</b><br><b>-ial</b><br><b>-ical</b>                                       | Adjetivo<br>Que tiene la cualidad de...                                                 | Magic magical<br>Race racial<br>Psychology psychological                                             | Magia mágico/mágica<br>Raza racial<br>Psicología psicológico/a                                   |
| <b>-an</b><br><b>-ian</b>                                                       | Sustantivo<br>Agente (persona que se dedica a) que pertenece a                          | Mathematics<br>mathematician<br>Music musician                                                       | Matemática matemático<br>Música músico                                                           |
| <b>-ance --ce</b><br><b>-ence</b><br><b>-ancy</b><br><b>-ency</b>               | Sustantivo abstracto Acción o estado de<br>Sustantivo abstracto<br>Estado o cualidad de | Disturb<br>disturbance<br>Adhere adherence<br>Conservancy<br>Complacency                             | Disturbar disturbio<br>Adherir adherencia adhesion<br>Conservaciòn<br>Complacencia               |
| <b>-ant</b><br><b>-ent</b>                                                      | Sustantivo<br>Adjetivo (derivados de verbos)                                            | Inhabit- inhabitant<br>Adhere – adherent<br>Resist - resistant                                       | Habitar- habitante<br>Adherir - adherente<br>Resistir – resistente                               |
| <b>-ar -iar</b>                                                                 | Adjetivo                                                                                | Family- familiar                                                                                     | Familia- familiar                                                                                |
| <b>-ary</b><br><b>-ory</b>                                                      | Adjetivo                                                                                | Elementary<br>Compulsory                                                                             | Elemental<br>Obligatorio                                                                         |
| <b>-ation -ition</b><br><b>-tion</b><br><b>-ion -xion</b><br><b>-cion -sion</b> | Sustantivo (la acción de)<br>O el estado de                                             | Sediment - sedimentation<br>Conduct – conduction<br>Operate – operation<br>Competition<br>Confession | Sedimento sedimentación<br>Conducir conducción<br>Operar – operación<br>Competiciòn<br>Confesión |
| <b>-ate</b>                                                                     | Adjetivo (en forma de, que posee)<br>Verbo                                              | Dent - dentate<br><br>Isolate                                                                        | Diente dentado<br><br>Aislar                                                                     |
| <b>-cy</b>                                                                      | Sustantivo                                                                              | Bureaucrat bureaucracy                                                                               | Burócrata burocracia                                                                             |
| <b>-dom</b>                                                                     | Sustantivo abstracto                                                                    | Free- freedom<br>King -kingdom<br>Wise - wisdom                                                      | Libre- libertad<br>Rey - reinado<br>Sabio –sabiduría                                             |

|                                                                                                                                 |                                                                                                                                                                   |                                                                                                                    |                                                                                                                                           |
|---------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Al final de un verbo</b><br><br><b>-ed</b><br><b>-d</b><br><b>-ied</b>                                                       | <u>Verbo pasado indefinido</u><br>(pasado simple)<br><br><u>Verbo participio pasado</u><br>(ado – ido ) (tiempos perfectos)<br><u>participio pasado (ado-ido)</u> | Consider – considered<br><br>They considered that ...<br><br>Consider - considered<br>They have considered that... | Considerar<br>consideró,consideraba,<br>Consideraron/consideraban que..<br><br>Considerar - considerado<br>Han considerado que ...        |
|                                                                                                                                 | <u>Adjetivo</u> (derivado de verbo o sustantivo)                                                                                                                  | <u>Seen</u> in this light...<br><br>Record – recorded<br>The recorded data... Skill – skilled<br>Culture - culture | <u>Visto</u> de esta manera...<br>Registrar – registrado/s<br>Los datos registrados<br>Habilidad – experto<br>Cultura – culto/a/s         |
| <b>-ee</b>                                                                                                                      | Sustantivo<br>(destinatario de una acción) El que es...                                                                                                           | Employ- employee<br>Grant- grantee                                                                                 | Emplear- empleado<br>Conceder concesionario/becario                                                                                       |
| <b>-efy</b>                                                                                                                     | Verbo                                                                                                                                                             | liquid –liquefy                                                                                                    | líquido – licuificar                                                                                                                      |
| <b>-en</b><br><b>-en</b>                                                                                                        | Adjetivo (hecho de)<br>Verbo                                                                                                                                      | Gold – golden<br>Strength<br>strengthen<br>Length - lengthen                                                       | Oro – de oro, dorado<br>Fuerza – fortalecer<br>Largo – alargar                                                                            |
| <b>-ence</b><br><b>-ent</b>                                                                                                     | Igual a <b>–ance- ant</b>                                                                                                                                         |                                                                                                                    |                                                                                                                                           |
| <b>-er</b><br><b>-or</b><br><b>-r</b><br><b>-er</b><br><b>Al final de un adjetivo</b><br><b>-er</b><br><b>-ier</b><br><b>-r</b> | Sustantivo agente<br>(la persona o cosa que realiza la acción o se ocupa de)<br><br><u>Adjetivo o adverbio (comparativo)</u>                                      | Drive – driver<br>Contain – container<br><br>High – higher than...<br>Fast – faster than ...                       | Conducir – conductor<br>Contener – contenedor, recipiente<br><br>Alto – más alto que...<br>Rápido o rápidamente – más rápidamente que ... |
| <b>-ern</b>                                                                                                                     | Adjetivo                                                                                                                                                          | West – western                                                                                                     | Oeste – occidental                                                                                                                        |
| <b>-ery</b><br><b>-ry</b>                                                                                                       | Sustantivo                                                                                                                                                        | Slave – slavery<br>Machine – machinery                                                                             | Esclavo – esclavitud<br>Máquina – maquinaria                                                                                              |
| <b>-ese</b>                                                                                                                     | Sustantivo<br>Adjetivo (nacionalidad)                                                                                                                             | China – Chinese                                                                                                    | China – chino/a/s                                                                                                                         |
| <b>-ess</b>                                                                                                                     | Sustantivo (femenino)                                                                                                                                             | Actor – actress<br>Tiger - tigress                                                                                 | Actor – actriz<br>Tigre – tigresa                                                                                                         |

|                                                                                        |                                                                           |                                         |                                                                |
|----------------------------------------------------------------------------------------|---------------------------------------------------------------------------|-----------------------------------------|----------------------------------------------------------------|
| <u><b>Al final de un adjetivo</b></u><br><br><b>-est</b><br><b>-iest</b><br><b>-st</b> | <u><b>Adjetivo Adverbio (superlativo)</b></u>                             | High –the highest<br>Fast – the fastest | Alto – el más alto<br>Rápidamente – más rápidamente que todos. |
| <b>-fold</b>                                                                           | Adjetivo ( se le agrega a los numerales para significar multiplicado por) | Two – twofold<br>Five - fivefold        | Dos – doble<br>Cinco – quíntuple                               |
| <b>-fy</b>                                                                             | Verbo                                                                     | Glory – glorify<br>Intense - intensify  | Gloria – glorificar<br>Intenso – intensificar                  |
| <b>-ful</b>                                                                            | Adjetivo (calidad de)                                                     | Use – useful<br>Doubt - doubtful        | Usar – útil<br>Dudar – dudoso                                  |

|                           |                                                                                                      |                                                                           |                                                                              |
|---------------------------|------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|------------------------------------------------------------------------------|
| <b>-hood</b>              | Sustantivo abstracto<br>Derivado de sustantivo                                                       | Child – childhood<br>Brother - brotherhood                                | Niño – niñez<br>Hermano - hermandad                                          |
| <b>-ian</b>               | Adjetivo – nacionalidad o relativo a.<br>Sustantivo<br>(que se ocupa de alguna ciencia o disciplina) | Canada – Canadian<br>Darwin – Darwinian<br><br>Mathematics- mathematician | Canadá – canadiense<br>Darwin – darwiniano/a<br><br>Matemáticas – matemático |
| <b>-ible</b>              | Ver -able                                                                                            |                                                                           |                                                                              |
| <b>-ic</b>                | Adjetivo                                                                                             | Artist – artistic<br>System - systematic                                  | Artista – artístico<br>Sistema – sistemático                                 |
| <b>-ics</b>               | Sustantivo – disciplina o ciencia                                                                    | Physics – Linguistics - Statistics                                        | Física – Lingüística – Estadística                                           |
| <b>-id</b>                | Adjetivo                                                                                             | Rigid                                                                     | Rígido/a                                                                     |
| <b>-ie</b><br><b>-y</b>   | Sustantivo (diminutivos para personas)                                                               | Dad – Daddy                                                               | Papá – Papito                                                                |
| <b>-ify -fy</b>           | Verbo                                                                                                | Solid – solidify                                                          | Sólido – solidificar                                                         |
| <b>-ile</b>               | Adjetivo                                                                                             | Infant – infantile                                                        | Infante – infantil                                                           |
| <b>-ine</b>               | Adjetivo                                                                                             | Saline                                                                    | Salino/a                                                                     |
| <b>-ion</b>               | Ver –ation                                                                                           |                                                                           |                                                                              |
| <b>-ish</b>               | Adjetivo (semejanza)                                                                                 | Yellow – yellowish                                                        | Amarillo – amarillento/a                                                     |
| <b>-ism</b>               | Sustantivo                                                                                           | Ideal – idealism                                                          | Ideal – idealismo                                                            |
| <b>-ist</b>               | Sustantivo (ocupación o profesión)                                                                   | Geology – geologist<br>Dentist -                                          | Geología – geólogo/a<br>Dentista                                             |
| <b>-ite</b>               | Sustantivo (términos científicos de minerales, fósiles, explosivos, etc)                             | Dynamite<br>anthracite                                                    | Dinamita<br>Antracita                                                        |
| <b>-ity</b><br><b>-ty</b> | Sustantivo (calidad de)                                                                              | Identity<br>security                                                      | Identidad<br>Seguridad                                                       |

|                              |                                                           |                                                                                |                                                                                                     |
|------------------------------|-----------------------------------------------------------|--------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| <b>-ive</b><br><b>-ative</b> | Adjetivo<br><br>Sustantivo                                | Select – selective<br>Quantity – quantitative<br>represent –<br>representative | Seleccionar –<br>selectivo/a/s Cantidad –<br>cuantitativo/a/s<br>representar- representante         |
| <b>-ise</b><br><b>-ize</b>   | Verbo (formación de verbos derivados del griego o latín ) | Organize organise                                                              | Organizar                                                                                           |
| <b>-less</b>                 | Adjetivo (privado de, sin)                                | Care – careless<br>End – endless<br>Doubt – doubless<br>Use – useless          | Cuidado – descuidado<br>Fin/final– sin fin /interminable<br>Cierto – indudable<br>Utilidad – inutil |
| <b>-let</b>                  | Sustantivo (diminutivos)                                  | Drop – droplet                                                                 | Gota – gotita                                                                                       |
| <b>-like</b>                 | Adjetivo (semejante a)                                    | Child – childlike                                                              | Niño – añado/a/s                                                                                    |
| <b>-logy</b>                 | Sustantivo (ciencias)                                     | Anthropology<br>Pharmacology                                                   | Antropología<br>Farmacología                                                                        |
| <b>-ly</b><br><br><b>-ly</b> | Adjetivo<br><br>Adverbio (-mente)                         | Heaven – heavenly<br><br>Slow – slowly<br>Instant – instantly                  | Cielo – celestial<br><br>Lento – lentamente<br>Instantáneoinstantaneamente                          |

|                                                                         |                                                                                 |                                                                                                                            |                                                                                                                            |
|-------------------------------------------------------------------------|---------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
|                                                                         |                                                                                 | General - generally                                                                                                        | generalmente.                                                                                                              |
| <b>-man</b>                                                             | Sustantivo – agente                                                             | Space – spaceman                                                                                                           | Espacio – astronauta                                                                                                       |
| <b>-ment</b>                                                            | Sustantivo (la acción de)                                                       | Displace – displacement                                                                                                    | Desplazar- desplazamiento                                                                                                  |
| <b>-ness</b>                                                            | Sustantivo (estado)                                                             | Happy – happiness                                                                                                          | Feliz – felicidad                                                                                                          |
| <b>-oid</b>                                                             | Adjetivo o Sustantivo                                                           | Anthropoid                                                                                                                 | Antropoide                                                                                                                 |
| <b>-ory</b>                                                             | Ver –ary                                                                        |                                                                                                                            |                                                                                                                            |
| <b>-our</b><br><b>-or</b>                                               | Sustantivo                                                                      | Behave – behaviour<br>Behave – behavior                                                                                    | Comportarse –<br>Comportamiento                                                                                            |
| <b>-ous</b><br><b>-eous</b><br><b>-ious</b>                             | Adjetivo                                                                        | Courage – corageous<br>Religion - religious                                                                                | Coraje,valor- Valeroso,<br>valiente<br>Religión – religioso                                                                |
| <b>-ry (ery)</b>                                                        | Sustantivo (ciencia u ocupación)                                                | Chemistry dentistry                                                                                                        | Química – cirugía dental                                                                                                   |
| <b>Terminación de palabra</b><br><b>-s</b><br><b>-es</b><br><b>-ies</b> | Verbo (tercera persona singular del presente simple)<br><br>Sustantivo (plural) | Make – makes<br>Pass – passes<br>Study – studies<br><br>Advantage – advantages<br>Class – classes<br>Activity - activities | Hacer – hace<br>Pasar – pasa<br>Estudiar – estudia<br><br>Ventajas – ventajas<br>Clase – clases<br>Actividad – actividades |

|                                            |                                                                                         |                                                             |                                                                   |
|--------------------------------------------|-----------------------------------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------------|
| <b>Al final del sustantivo</b><br>'s<br>s` | Sustantivo (posesivo)                                                                   | Darwin Darwin`s theory<br>Teachers – the teachers` protest. | Darwin – la teoría de Darwin<br>La protesta de los maestros.      |
| <b>-ship</b>                               | Sustantivo abstracto                                                                    | Friend –<br>friendship<br>Workman -<br>workmanship          | Amigo/a – amistad<br>Destreza, pericia                            |
| <b>-some</b>                               | Adjetivo (lo que produce)                                                               | Trouble - troublesome                                       | Problema – problemático<br>Penoso, molesto                        |
| <b>-th</b>                                 | Sustantivo abstracto o numero ordinal                                                   | Grow – growth (sust.abst)<br>Six – sixth (num.ordinal)      | Crece – crecimiento<br>Seis – sexto                               |
| <b>-tion</b>                               | sustantivo                                                                              | organize- organization                                      | organizar-organización                                            |
| <b>-ude</b>                                | Sustantivo                                                                              | Attitude                                                    | Actitud                                                           |
| <b>-ure</b>                                | Sustantivo                                                                              | Procedure - nature                                          | Procedimiento -naturaleza                                         |
| <b>-ward (s)</b>                           | Adjetivo(en dirección a)<br>(en el mismo sentido que)<br>Adverbio (hacia, en dirección) | Down – downward<br><br>Fore – foreward                      | Abajo, hacia abajo, descendente<br><br>Adelante, hacia delante    |
| <b>-wise</b>                               | Adjetivo<br>Adverbio (en sentido de)                                                    | Clock – clockwise                                           | Reloj – en el sentido de las agujas del reloj/ hacia la derecha   |
| <b>-y</b>                                  | Adjetivo (lo que está compuesto de)<br>Sustantivo                                       | Stone – stony<br>Dirt - dirty<br>Assemble - assembly        | Piedra – pétreo<br>Suciedad - sucio<br>Reunir,congregar- asamblea |

## LISTA DE VERBOS IRREGULARES

|                             |                 |            |                                      |
|-----------------------------|-----------------|------------|--------------------------------------|
| Arise                       | Arose           | Arisen     | Levantarse                           |
| Awake                       | Awoke           | Awoken     | Despertar                            |
| <b>Be</b> <i>am-is- are</i> | <b>Was were</b> | Been       | Ser o estar                          |
| Bear                        | Bore            | Borne      | Llevar, cargar, sostener, dar a luz  |
| Beat                        | Beat            | Beaten     | Golpear                              |
| Become                      | Became          | Become     | Volverse, hacerse, ponerse           |
| Begin                       | Began           | Begun      | Comenzar, iniciar/se                 |
| Bend                        | Bent            | Bent       | Doblarse/se, torcer/se, inclinarse.  |
| Bet                         | Bet             | Bet        | Apostar, poner                       |
| Bid                         | Bid             | Bid Bidden | Invitar, ofrecer, licitar, rematar   |
| Bind                        | Bound           | Bound      | Atar, unir, enlazar, trabar          |
| Bite                        | Bit             | Bitten     | Morder                               |
| Bleed                       | Bled            | Bled       | Sangrar                              |
| Blow                        | Blew            | Blown      | Soplar, inflar, reventar             |
| Break                       | Broke           | Broken     | Romper, separar/se, interrumpir      |
| Breed                       | Bred            | Bred       | Engendrar, producir, crear           |
| Bring                       | Brought         | Brought    | Traer, rendir, producir              |
| broadcast                   | broadcast       | broadcast  | Radiar, transmitir, Difundir, emitir |
| Build                       | Built           | Built      | Construir, fabricar, formar          |

|          |              |               |                                        |
|----------|--------------|---------------|----------------------------------------|
| Burn     | Burnt        | Burnt         | Arder, quemar/se,                      |
| Burst    | Burst        | Burst         | Estallar, explotar, abrirse            |
| Buy      | Bought       | bought        | Comprar                                |
| Cast     | Cast         | Cast          | Lanzar, moldear, fundir,               |
| Catch    | Caught       | Caught        | Atrapar                                |
| Choose   | Chose        | Chosen        | Elegir, preferir                       |
| cleave   | Cleft/ clove | Cleft/ cloven | Partir, dividir, Hender                |
| Cling    | Clung        | Clung         | Agarrarse, Pegarse                     |
| Come     | Came         | Come          | Venir, llegar,                         |
| Cost     | Cost         | Cost          | Costar, valer                          |
| Creep    | Crept        | Crept         | Arrastrarse                            |
| Cut      | Cut          | Cut           | Cortar, divider, reducir               |
| Deal     | Dealt        | Dealt         | Repartir, distribuir, encargarse de,   |
| Dig      | Dug          | Dug           | Excavar, extraer                       |
| Do       | Did          | Done          | Hacer, producir                        |
| Draw     | Drew         | Drawn         | Tirar, dibujar, extraer                |
| Dream    | Dreamt       | Dreamt        | Soñar, imaginar                        |
| Drink    | Drank        | Drunk         | Beber                                  |
| Drive    | Drove        | Driven        | Conducir, manejar, accionar            |
| Dwell    | Dwelt        | Dwelt         | Habitar, extenderse                    |
| Eat      | Ate          | Eaten         | Comer                                  |
| Fall     | Fell         | Fallen        | Caer/se, bajar, desplomarse.           |
| Feed     | Fed          | Fed           | Alimentar/se, nutrirse                 |
| Feel     | Felt         | Felt          | Sentir, palpar                         |
| Fight    | fought       | Fought        | Pelear, luchar                         |
| Find     | Found        | Found         | Encontrar, descubrir                   |
| Flee     | Fled         | Fled          | Huir, esquivar, evadir                 |
| Fling    | Flung        | Flung         | Arrojar, echar, desechar               |
| Fly      | Flew         | Flown         | Volar, viajar en avión, huir, lanzar   |
| Forbid   | Forbade      | Forbidden     | Prohibir                               |
| Forecast | Forecast     | Forecast      | Predecir, proyectar                    |
| forget   | forgot       | Forgotten     | Olvidar                                |
| forgive  | forgave      | forgiven      | Perdonar                               |
| freeze   | froze        | frozen        | Congelar/se, enfriar                   |
| get      | got          | got-gotten    | Obtener y (verbos especiales)          |
| Gild     | Gilded       | Gilt          | Dorar, dar lustre o brillo             |
| Gird     | Girt         | Girt          | Medir la circunferencia ceñir          |
| give     | gave         | given         | Dar, otorgar, mostrar,                 |
| go       | went         | gone          | Ir, moverse, funcionar, marcharse      |
| grind    | ground       | ground        | Moler, esmerilar, pulir, afilar        |
| grow     | grew         | grown         | Crecer, desarrollarse                  |
| hang     | Hung/ hunged | hung          | Colgar, suspender                      |
| have     | had          | Had           | Tener y verbos especiales              |
| hear     | Heard        | Heard         | Oír, prestar atención, enterarse.      |
| Heave    | Hove         | Hove          | Levantar, henchir, izar, arrojar       |
| Hew      | Hewed        | Hewn          | Tajar, labrar, Picar, separar, Modelar |
| hide     | hid          | Hidden        | Esconder                               |
| Hit      | Hit          | Hit           | Golpear, afectar, alcanzar             |

|         |         |          |                                      |
|---------|---------|----------|--------------------------------------|
| Hold    | Held    | Held     | Mantener, tener, sujetar, contener   |
| Hurt    | Hurt    | Hurt     | Lastimar(se)                         |
| Keep    | Kept    | Kept     | Guardar, mantener, conservar,        |
| Kneel   | Knelt   | Knelt    | Arrodillarse, Postrarse              |
| Knit    | Knit    | Knit     | Tejer, enlazar, Unir, trabar, soldar |
| Know    | Knew    | Known    | Saber, conocer, distinguir.          |
| Lade    | Laded   | Laden    | Cargar, desembocar                   |
| Lay     | Laid    | Laid     | Colocar                              |
| Lead    | Led     | Led      | Guiar,dirigir                        |
| Lean    | Leant   | Leant    | Inclinarse, apoyarse, propender      |
| Leap    | Leapt   | Leapt    | Saltar,brotar                        |
| Learn   | Learnt  | Learnt   | Aprender, estudiar, saber,           |
| Leave   | Left    | Left     | Dejar,partir                         |
| Lend    | Lent    | Lent     | Prestar                              |
| Let     | Let     | Let      | Dejar,permitir, dar, asignar         |
| Lie     | Lay     | Lain     | Yacer, echarse, estar ubicado        |
| Light   | Lit     | Lit      | Alumbrar, encender/se                |
| Lose    | Lost    | Lost     | Perder, arruinar                     |
| Make    | Made    | Made     | Hacer, fabricar, producir,           |
| Mean    | Meant   | Meant    | Significar, referirse a              |
| Meet    | Met     | Met      | Encontrarse , conocer                |
| mistake | Mistook | mistaken | Engañarse, confundirse               |
| Mow     | Mowed   | Mown     | Segar, cortar, Arrasar               |
| Pay     | Paid    | Paid     | Pagar                                |
| Put     | Put     | Put      | Poner, colocar                       |
| Quit    | Quit    | Quit     | Abandonar Descontinuar compensar     |
| Read    | Read    | Read     | Leer, interpretar, registrar         |
| Reeve   | Rove    | Rove     | Pasar por una polea, atar,           |
| Rend    | Rent    | Rent     | Arrancar, rasgar, arrebatat          |
| Rid     | Rid     | Rid      | Deshacerse de                        |
| Ride    | Rode    | Ridden   | Montar                               |
| Ring    | Rang    | Rung     | Sonar                                |
| Rise    | Rose    | Risen    | Levantarse, elevarse,                |
| Run     | Ran     | Run      | Correr, accionar, funcionar          |
| Saw     | sawed   | Sawn     | Aserrar, serruchar, cortar           |
| Say     | Said    | Said     | Decir, manifestar                    |
| See     | Saw     | Seen     | Ver, comprender, visitar             |
| Seek    | Sought  | Sought   | Buscar                               |
| Seethe  | Sod     | Sodden   | Bullir, hervir, empapar              |
| Sell    | Sold    | Sold     | Vender, convencer                    |
| Send    | Sent    | Sent     | Eviar, transmitir                    |
| Set     | Set     | Set      | Colocar, acomodar, ajustar           |
| Sew     | Sewed   | Sewn     | Coser, asegurarse, Finiquitar        |
| Shake   | Shook   | Shaken   | Sacudir/se, agitar/se, estremecer/se |
| Shave   | Saved   | Shaven   | Razurar, Rebanar, Descontar          |
| Shear   | Shore   | Shorn    | Cortar con tijera, rapar, Esquilar,  |
| Shed    | Shed    | Shed     | Derramar, Difundir Cambiar,          |
| Shine   | Shone   | Shone    | Brillar, lustrar                     |
| Shoot   | Shot    | shot     | disparar                             |

|        |                |                 |                                       |
|--------|----------------|-----------------|---------------------------------------|
| Show   | Showed         | shown           | mostrar                               |
| Shrink | Shrank, shrunk | Shrunk/shrunken | encoger                               |
| Shoe   | Shod           | Shod            | Calzar, Poner llantas o ruedas        |
| Shut   | Shut           | shut            | cerrar                                |
| Sing   | Sang           | Sung            | cantar                                |
| Sink   | Sank           | Sunk            | hundir                                |
| Sit    | Sat            | Sat             | sentarse                              |
| Sleep  | Slept          | Slept           | dormir                                |
| Slide  | Slid           |                 |                                       |
| Smite  | Smote          | Smitten         | Golpear, Destruir aniquilar           |
| Sow    | Sowed          | Sown            | Sembrar, Diseminar, Esparcir          |
| Speak  | Spoke          | Spoken          | Hablar                                |
| Speed  | Sped           | Sped            | Apresurarse, Progresar promover       |
| Spell  | Spelt          | Spelt           | Deletrear Significar, descubrir       |
| Spend  | Spent          | Spent           | Gastar, pasar                         |
| Spill  | Spilt          | Spilt           | Derramar, verter                      |
| Spin   | Spun/ span     | Spun            | Hilar, hacer girar, retorcer          |
| Spit   | Spat/ spit     | Spat/ Spit      | Escupir, Despedir, encender           |
| split  | Split          | Split           | Hender, partir, dividir               |
| Spread | Spread         | Spread          | Extender/se diseminar/se, desplegarse |
| Spoil  | Spoilt         | Spoilt          | Arruinar Mutilar, Viciar              |
| Spread | Spread         | Spread          | Extender, Expandir, difundir          |
| Spring | Sprang         | Sprung          | Saltar, Rebotar, estallar             |
| Stand  | Stood          | Stood           | Estar de pie, enderesar/se            |
| Stave  | Stove          | Stove           | Romper, desfondar,                    |
| Steal  | Stole          | Stolen          | Robar escabullirse                    |
| Stick  | Stuck          | Stuck           | Pegar/se, estar clavado               |
| Sting  | Stung          | Stung           | Picar, Estimular estafar              |
| stink  | Stank/ Stunk   | Stunk           | Oler apestar                          |
| Strew  | Strewed        | Strewn          | Esparcir, Diseminar                   |
| Stride | Strode         | Stridden        | Andar con pasos largos                |
| Strike | Struck         | Struck          | Golpear, chocar con                   |
| String | Strung         | Strung          | Avanzar en linea, extenderse          |
| Strive | Strove         | Striven         | Esforzarse, competir                  |
| Swear  | Swore          | Sworn           | Jurar                                 |
| Sweat  | Sweat          | Sweat           | Transpirar, Fermentar Fundir          |
| Sweep  | Swept          | Swept           | Barrer Recolectar                     |
| Swell  | Swelled        | Swollen         | Hincharse, Expandirse                 |
| Swim   | Swam           | Swum            | Nadar Flotar                          |
| Swing  | Swung          | Swung           | Columpiar, balancear/se               |
| Take   | Took           | Taken           | Tomar, llevar requerir, ocupar        |
| Teach  | Taught         | Taught          | Enseñar, instruir, educar             |
| Tear   | Tore           | Torn            | Desgarrar, rasgar, despedazar         |
| Tell   | Told           | Told            | Decir                                 |
| Think  | Thought        | Thought         | Pensar                                |
| Thrive | Throve         | Thriven         | Prosperar Enriquecerse Tener éxito    |
| Throw  | Threw          | Thrown          | Lanzar, arrojar                       |

|            |            |            |                             |
|------------|------------|------------|-----------------------------|
| Thrust     | Thrust     | Thrust     | Empujar con fuerza          |
| Tread      | Trod       | Trodden    | Pisar, cubrir               |
| understand | understood | understood | Entender comprender saber   |
| upset      | upset      | upset      | Volcar(se)                  |
| wake       | woke       | Woken      | Despertar(se)               |
| Wear       | Wore       | Worn       | Usar, gastar/se consumer/se |
| Weave      | Wove       | Woven      | Tejer, Entrelazar forjar    |
| Wed        | Wed        | Wed        | CasarseUnir aunar           |
| Weep       | Wept       | wept       | Llorar exudar               |
| Wet        | Wet        | Wet        | Mojar humedecer             |
| Win        | Won        | Won        | Ganar                       |
| Wind       | Wound      | Wound      | Enrollar                    |
| Withdraw   | Withdrew   | Withdrawn  | Retirar/se, sacar, apartar  |
| Withhold   | withheld   | withheld   | Detener Impedir abstenerse  |
| Withstand  | Withstood  | Withstood  | Resistir, oponerse,         |
| Work       | Wrought    | Wrought    | Trabajar Labrar calcular    |
| Wring      | Wrung      | Wrung      | Retorcer, arracar           |
| Write      | Wrote      | Written    | Escribir                    |