



Payam Noor University

English for the Students of Agriculture

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امروز کتابخوانی و علم‌آموزی نه تنها یک وظیفه‌ی ملی، که یک واجب دینی است.^۱

مقام معظم رهبری

در عصر حاضر یکی از شاخصه‌های ارزیابی رشد، توسعه و پیشرفت فرهنگی هر کشوری میزان تولید کتاب، مطالعه و کتابخوانی مردم آن مرز و بوم است. ایران اسلامی نیز از دیرباز تاکنون با داشتن تمدنی چندهزارساله و مراکز متعدد علمی، فرهنگی، کتابخانه‌های معتبر، علما و دانشمندان بزرگ با آثار ارزشمند تاریخی، سرآمد دولت‌ها و ملت‌های دیگر بوده و در عرصه فرهنگ و تمدن جهانی به‌سان خورشیدی تابناک همچنان می‌درخشد و با فرزندان نیک‌نهاد خویش هنرنمایی می‌کند. چه کسی است که در دنیا با دانشمندان فرزانه و نام‌آور ایرانی همچون ابوعلی سینا، ابوریحان بیرونی، فارابی، خوارزمی و ... همچنین شاعران برجسته‌ای نظیر فردوسی، سعدی، مولوی، حافظ و ... آشنا نباشد و در مقابل عظمت آنها سر تعظیم فرود نیاورد. تمامی این افتخارات ارزشمند، برگرفته از میزان عشق و علاقه فراوان ملت ما به فراگیری علم و دانش از طریق خواندن و مطالعه منابع و کتاب‌های گوناگون است. به شکرانه الهی، تاریخ و گذشته ما، همیشه درخشان و پر بار است. ولی اکنون در این زمینه در چه جایگاهی قرار داریم؟ آمار و ارقام ارائه‌شده از سوی مجامع و سازمان‌های فرهنگی در مورد سرانه مطالعه هر ایرانی، برایمان چندان امیدوارکننده نمی‌باشد.

کتاب، دروازه‌ای به سوی گستره دانش و معرفت است و کتاب خوب، یکی از بهترین ابزارهای کمال بشری است. همه دستاوردهای بشر در سراسر عمر جهان، تا آنجا که قابل کتابت بوده است، در میان دست‌نوشته‌هایی است که انسان‌ها پدید آورده و می‌آورند. در این مجموعه بی‌نظیر، تعالیم الهی، درس‌های پیامبران به بشر، و همچنین علوم مختلفی است که سعادت بشر بدون آگاهی از آنها امکان‌پذیر نیست. کسی که با دنیای زیبا و زندگی‌بخش کتاب ارتباط ندارد بی‌شک از مهم‌ترین دستاورد انسانی و نیز از بیشترین معارف الهی و بشری محروم است. با این دیدگاه، به‌روشنی می‌توان ارزش و مفهوم رمزی عمیق در این حقیقت تاریخی را دریافت که اولین خطاب خداوند متعال به پیامبر گرامی اسلام (ص) این است که «بخوان!» و در اولین سوره‌ای که بر آن فرستاده عظیم‌الشأن خداوند، فرود آمده، نام «قلم» به تجلیل یاد

1. <https://farsi.khamenei.ir/message-content?id=2696>

شده است: «إِقْرَأْ وَ رَبُّكَ الْأَكْرَمُ. الَّذِي عَلَّمَ بِالْقَلَمِ» در اهمیت عنصر کتاب برای تکامل جامعه انسانی، همین بس که تمامی ادیان آسمانی و رجال بزرگ تاریخ بشری، از طریق کتاب جاودانه مانده اند.

دانشگاه پیام نور با گستره جغرافیایی ایران شمول خود با هدف آموزش برای همه، همه جا و همه وقت، به عنوان دانشگاهی کتاب محور در نظام آموزش عالی کشورمان، افتخار دارد جایگاه اندیشه سازی و خردورزی بخش عظیمی از جوانان جویای علم این مرز و بوم باشد. تلاش فراوانی در ایام طولانی فعالیت این دانشگاه انجام پذیرفته تا با بهره گیری از تجربه های گرانقدر استادان و صاحب نظران برجسته کشورمان، کتاب ها و منابع آموزشی درسی شاخص و خودآموز تولید شود. در آینده هم، این مهم با هدف ارتقای سطح علمی، روزآمدی و توجه بیشتر به نیازهای مخاطبان دانشگاه پیام نور با جدیت ادامه خواهد داشت. به طور قطع استفاده از نظرات استادان، صاحب نظران و دانشجویان محترم، ما را در انجام این وظیفه مهم و خطیر یاری رسان خواهد بود. پیشاپیش از تمامی عزیزانی که با نقد، تصحیح و پیشنهادهای خود ما را در انجام این وظیفه خطیر یاری می رسانند، سپاسگزاری می نمایم. لازم است از تمامی اندیشمندانی که تاکنون دانشگاه پیام نور را منزلگاه اندیشه سازی خود دانسته و ما را در تولید کتاب و محتوای آموزشی درسی یاری نموده اند، صمیمانه قدردانی گردد. موفقیت و بهروزی تمامی دانشجویان و دانش پژوهان عزیز آرزوی همیشگی ما است.

دانشگاه پیام نور

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Preface

Students of all academic fields and their branches must exchange ideas, thoughts, and information. They also need to read and publish research findings. In today's world, students and their teachers must share English as a communal language to participate in the academic world and global society. *English for the Students of Agriculture* is supposed to achieve this goal by providing the audiences with the necessary vocabulary and reading passages related to agricultural and farming fields.

The book has been designed to bring students from a basic level of English to higher competence for understanding and using English in the field of agriculture. By reading this course, students are expected to acquire essential vocabulary and reading skills needed to get the most out of what students read in agricultural and related fields. The book is also useful for students who need to participate in M.A. and Ph. D entrance exams. Most importantly, the book was designed with the cooperation and collaboration of specialists in English teaching and scholars in the agricultural and farming fields.

In writing this book, we attempted to use state-of-the-art and up-to-date texts from various textbooks and websites. The sources from which the main reading comprehension texts have been taken are mentioned at the end of the book. In preparing the list of references, we followed APA style, 7th edition.

The book is divided into 28 units from 3 different branches of the vast field of agriculture.

Needless to say, it is not practical and possible to teach all of the units in one semester; hence, teachers and instructors are advised to select some units under the students' majors, needs, and levels of language proficiency.

In the end, we hope the learners will find the book interesting, innovative, and conducive to learning the language of their field. For sure, what we have attempted is not perfect. Any suggestions, recommendations, or criticisms from our colleagues and friends are welcomed. For more convenience, they may be emailed to mygiveandtake2014@gmail.com.

پیش‌نیاز درک مفاهیم کتاب

الف) مشکلات عمده دانشجویان فارسی‌زبان در ترجمه متون علمی

دانشجویان فارسی‌زبان هنگام ترجمه متون علمی از فارسی به انگلیسی با چالش‌های متعددی روبرو هستند. برخی از این مشکلات عبارتند از:

۱. عدم آشنایی با اصطلاحات تخصصی: بسیاری از دانشجویان با واژه‌ها و اصطلاحات علمی در زبان انگلیسی نیستند.
۲. ساختار جملات: ساختار جملات در فارسی و انگلیسی متفاوت است و این موضوع می‌تواند منجر به ترجمه نادرست شود.
۳. قواعد گرامری: عدم تسلط بر قواعد گرامری زبان انگلیسی می‌تواند به ترجمه‌های نادرست منجر شود.
۴. معانی چندگانه: برخی واژه‌ها در زبان انگلیسی معانی مختلفی دارند و انتخاب معنی مناسب در متن علمی اهمیت زیادی دارد.

آموزش نکات کلیدی برای ترجمه متون علمی از فارسی به انگلیسی

ترجمه متون علمی نیازمند دقت و آگاهی از اصطلاحات و قواعد زبان و توجه به جزئیات دارد. با تمرین و استفاده از منابع معتبر و رعایت نکات ذیل، دانشجویان می‌توانند مهارت‌های ترجمه خود را بهبود بخشند.

۱. تحلیل متن اولیه:

- درک مفهوم کلی: قبل از شروع به ترجمه، متن را به دقت بخوانید و مفهوم کلی آن را درک کنید.

۲. جملات را به بخش‌های اصلی تقسیم کنید: فاعل، فعل، مفعول و توصیف‌کننده‌ها.

۳. شناسایی واژه‌های کلیدی:

- شناسایی و درک علمی واژه‌ها و عبارات کلیدی: مانند "تأثیرات منفی (Negative Impacts)", "کودهای ارگانیک (Organic fertilizers)", "منابع طبیعی (natural resources)".

۴. آشنایی با اصطلاحات تخصصی:

- قبل از ترجمه، به دیکشنری‌های تخصصی مراجعه کنید و اصطلاحات علمی را یاد بگیرید.
مانند "کشاورزی پایدار" به "sustainable agriculture".

۵. بررسی گرامر و ویرایش:

- پس از ترجمه، متن را از نظر گرامری و ساختاری بررسی کنید. اطمینان حاصل کنید که جملات روان و قابل فهم هستند.

۶. توجه به زمان‌ها:

- استفاده از زمان‌های مناسب: برای بیان حقایق و ویژگی‌های دائمی از زمان حال ساده و برای بیان اقداماتی که در گذشته انجام شده‌اند از زمان‌های گذشته استفاده کنید.

۷. توجه به جملات شرطی:

- استفاده از جملات شرطی: اگر در متن اصلی جملات شرطی وجود دارد، آن‌ها را به درستی ترجمه کنید.

۸. توجه به ساختار جملات:

- ساختار جملات را با توجه به زبان مقصد تنظیم کنید. برای مثال، در انگلیسی معمولاً فعل قبل از فاعل می‌آید.

به عنوان مثال، "اصلاح گیاهان علمی است" به "Plant breeding is the science" ترجمه می‌شود.

۹. استفاده از جملات کوتاه و واضح:

- جملات را کوتاه و واضح بیان دارید تا فهم آن‌ها آسان‌تر باشد.

۱۰. بررسی قواعد گرامری:

- قبل از نهایی کردن ترجمه، قواعد گرامری را بررسی کنید. به زمان فعل، جمع و مفرد بودن و دیگر جزئیات توجه کنید.

۱۱. استفاده از منابع معتبر:

- از منابع معتبر و دیکشنری‌های تخصصی برای بررسی معانی و استفاده صحیح از واژه‌ها بهره ببرید.

۱۲. بازبینی و ویرایش:

- پس از ترجمه، متن را بازبینی کنید و مطمئن شوید که مفهوم به درستی منتقل شده است.

۱۳. بازخورد و اصلاح:

- دریافت نظر دیگران: اگر ممکن است، از دیگران بخواهید متن شما را بخوانند و نظر دهند. این کار به بهبود کیفیت ترجمه کمک می‌کند.

ب- توضیحات زیر می‌تواند به عنوان مرجع سریع برای درک اجزای جمله انگلیسی با حروف اختصاری و معانی آن‌ها استفاده شود.

- فعل (V): عمل یا حالت را نشان می‌دهد.

- اسم (N): شخص، مکان، چیز یا ایده را نشان می‌دهد.

- صفت (Adj): ویژگی یا حالت اسم را توصیف می‌کند.

- قید (Adv): چگونگی، زمان، مکان یا درجه فعل، صفت یا قید دیگر را توصیف می‌کند.

ج- تعریف نام علمی گیاه در علوم کشاورزی

نام علمی گیاه (Scientific Name) به نام رسمی و بین‌المللی یک گیاه اشاره دارد که براساس سیستم طبقه‌بندی علمی (نظام نامگذاری دو قسمتی) تعیین می‌شود. این نام معمولاً شامل دو بخش است: جنس (Genus): بخش اول نام که با حرف بزرگ آغاز می‌شود و به گروهی از گونه‌ها اشاره دارد که ویژگی‌های مشترکی دارند.

گونه (Species): بخش دوم نام که با حرف کوچک آغاز می‌شود و به یک گونه خاص در درون جنس اشاره دارد.

مثال:

برای مثال، نام علمی گیاه گلابی به صورت زیر است:

جنس: *Pyrus*

گونه: *communis*

بنابراین، نام علمی کامل گلابی به صورت *Pyrus communis* نوشته می‌شود.

Unit 1

What is Agriculture? (I)



A. Word Study

Agronomy (n): application of the various soil and plant sciences to soil management and crop production; scientific agriculture

1. What do you want to study in the future? I am going to college to study **agronomy**.

2. Agronomy, physiology, genetics, crop protection, postharvest storage, and product processing are the main subjects of my major.

Ant (n): a small insect that can be black, red, brown, or yellow. The ant is known for working hard and being strong.

1. **Ants** have colonized almost every landmass on Earth

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2. The only places lacking indigenous ants are Antarctica and a few remote or inhospitable islands.

3. Although **ants** are small insects, they can damage crops and invade huge buildings.

Bamboo (n): Any of various usually woody, temperate, or tropical grasses resembling trees; materials made of bamboo

1. This flute is made of bamboo.

Biodiesel: a fuel made from vegetable and animal fat oils that have been processed to Remove glycerin

1. **Biodiesel** is typically made by chemically reacting lipids (e.g., vegetable oil, animal fat) With alcohol-producing fatty acid esters.

2. **Biodiesel** refers to a vegetable oil- or animal fat-based diesel fuel consisting of long-chain

alkyl (methyl, propyl or ethyl) esters

Biomass (n): a renewable energy source from living or recently living plant and animal materials that can be used as fuel

1. An example of **biomass** is animal fossil fuel

2. **Biomass** aerosols interact with clouds.

Biopharmaceutical (n): a drug created by means of biotechnology, especially genetic

1. **Biopharmaceuticals** are medical drugs produced using biotechnology.

2. artificial insulin, or HI, is an example of a **biopharmaceutical**.

Breed (n): a breed is a group of domestic animals or plants with a homogeneous appearance, behavior, and other characteristics that distinguish it from other animals or plants of the same species and arrived at through selective breeding.

1. All specimens of the same **breed** share several genetic characteristics.

2. Plant **breeds** are commonly known as cultivars.

Breed (v): To breed is to cause reproduction by controlled mating to achieve a desired trait or to cause something to happen over time.

1. When you mate two dogs together in order to create a pure-bred dog, this is an example of a situation where you **breed** dogs.

2. When you foster resentment over time by constantly complaining, this is an example of a situation where you **breed** resentment.

Cereal(n): any grain used for food, such as wheat, oats, or rice

1. The first **cereal** grains were domesticated about 12,000 years ago by ancient farming communities in the Fertile Crescent region.

2. Wheat, rye, triticale, oats, barley, and spelled are the "cool-season" **cereals**.

Civilization (n): civilization refers to a society or group of people or the process of achieving a higher state of social development.

1. An example of **civilization** is an industrial society that has arts, sciences, and machines such as cars.

2. The total culture of a particular people, nation, period, etc is known as **civilization**

Climate (n): the weather of a location over time or the environment

1. An example of **climate** is when it is snowy and rainy.

2. The **climate** of Hamedan City is very cold, but Ahawz has a hot and humid climate. **Crossbreed (n)**: offspring produced as a result of breeding animals of one breed with other animals of another breed are known as crossbreeds or mixed breeds

Cultivation (n): the state of being cultivated.

1. **Cultivation** of crops probably began twelve thousand years ago in the Middle East.

2. **Cultivation** of mushrooms has become a profitable business in recent years.

Cut flower: any of various showy flowers used in fresh arrangements.

1. Any pretty flower cut for a floral arrangement is **called a cut flower**

2. Typically, the **cut flowers** are placed in a vase

3. Many gardeners harvest their own **cut flowers** from domestic gardens.

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Domesticated (adj): tamed, trained, housebroken; tame

1. They keep **domesticated** animals such as cats, chickens and pigs.

2. **Domesticated** elephants are still being used to clear forests illegally.

Fertilizer (n): a person or thing that fertilizes any material, such as manure, chemicals, etc., put on or in the soil to improve the quality or quantity of plant growth.

1. Phosphorous **fertilizers** are added to soil in order to improve the quality and quantity of plant growth.

Flax (n): any plant of the genus *Linum*, especially *L. usitatissimum*, a slender, erect, annual plant having narrow, lance-shaped leaves and blue flowers, cultivated for its fiber and seeds; the fiber of this plant, manufactured into linen yarn for thread or woven fabrics.

1. The inside of the driver's seat was made from soy-based foam, while the cover consisted of a fabric made from **flax**.

Foster (v): to promote or encourage

1. An example of **fostering** is to help a new company campaign grow.

2. A peaceful mind can **foster** the student's learning.

Fuel (n): a material such as wood, coal, gas, or oil burned to produce heat or power.

1. A major cause of climate change is the burning of fossil **fuels** to create energy

2. Last night, we wanted to make an open fire on that hill, but we couldn't find any **fuel**. **Fungi (n):** fungi are the plural form of fungus. A fungus is an organism that feeds on organic matter

1. Yeast is an example of a **fungus**.

2. **Fungus** *aspergillus* often grows in decaying vegetation.

Global (adj): relating to the whole world, entirely or comprehensive

1. **The global** economy is becoming more dependent on the internet.

Gross (n): with no deductions; total; entire

1. The **gross** amount I received was 7500 \$ not more than I expected

Hemp (n): the fiber used to make rope sailcloth; hemp plants

1. **Hemp** is used for a wide variety of purposes, including durable clothing, ropes, and sacks.

Husbandry (n): The application of scientific principles to agriculture, especially to animal breeding

1. The practice of managing a farm, growing crops, and breeding animals is an example Of husbandry.

Hybrid (n): Hybrid means something that is a combination of two different things.

1. An example of a **hybrid** is a rose that is made from two different types of roses.

2. A mule is a hybrid equid, a cross of a female horse and a male donkey.

Industrial (n): relating to a large-scale business or a manufacturing business

1. An example of **industrial** equipment is a printing press.

Intensive pig farming:(known as pig system) i s a system or a factory of raising pigs indoors in special houses or sheds made for this purpose, the system of raising pigs is said to result in lower birth production costs; however, this practice has led to more significant animal welfare concerns

1. **Intensive piggeries** are generally large warehouse-like buildings or barns

Irrigation (n): the act of supplying plants with water

1. Raising grain without any type of **irrigation** is something impossible.

2. To supply (land) with water using ditches, artificial channels, or sprinklers is Referred to as **irrigation**.

Livestock (n): farm animals kept for use on a farm and raised for sale and profit

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1. Cows that are raised on a farm and sold for meat are an example of **livestock**.

2. **Livestock** farming in Scotland cannot survive without subsidy.

Lumber (n): wood sawed into beams and boards of convenient sizes

1. **Lumber** around our gardens in early spring are all queens.

2. **Lumber** or timber is wood in any of its stages, from felling to readiness for use as a structural material for construction or wood pulp for paper production.

Monoculture (n): the raising of only one crop or product without using the land for other purposes; a single, homogeneous culture without diversity or dissension

1. **Monocultures** can lead to the quicker spread of diseases, where a uniform crop is Susceptible to a pathogen.

2. 'Crop **monoculture**' is the practice of growing the same crop year after year.

3. 'The English 454' is a **monoculture** course since all the language learners come from Argentina.

Nurture (v): to feed, train, or help develop someone or something

1. Parents often do their best to **nurture** their children.

2. John has a talent for physics, and his teachers try to **nurture** his talent more than this. **Organic (n):** natural matter or compounds with a carbon base, and also refers to food and meat grown or raised without chemicals or pesticides

1. Food grown on a farm where only animal or vegetable fertilizers are used is an example of **organic** food

2. The fish are fed by hand, and the feed is purely **organic**.

Ornamental (n): serving as or about an ornament; decorative

1. There were two ornamental ponds in the center of the garden, close to which is the tea garden.

2. On the window, there were some **ornamental** flowers.

Output (n): Output is the act of producing something, the amount of something that is produced, or the process in which something is delivered.

1. An example of **output** is the electricity produced by a power plant.

Pastoral (n): associated with or related to rural or country life.

1. An example of a **pastoral** is a painting of a farm.

Permaculture (n): a system of perennial agriculture emphasizing the use of renewable natural resources and the enrichment of local ecosystems.

1. **Permaculture** draws from several other disciplines, including organic farming, Agroforestry, sustainable development, and applied ecology.

2. **Permaculture** as a systematic method was developed by Australians Bill Malison and David Holmgren during the 1970s.

3. **Permaculture** is a theory of ecological design which attempts to develop sustainable human settlements and agricultural systems modeled from natural ecosystems.

Raise (v): to cause to grow or to breed

1. Farmers raise rice in the north of Iran

Rangeland: an expanse of land suitable for livestock to wander and graze on.

1. **Rangeland** resources in the eastern part of the country are abundant.

Rely on (v): to depend confidently; put trust in (usually followed by on or upon)

1. You can **rely on** her work.

2. She relies on her mother, no one else.

Sector (n): a separate or distinct area or part of something larger

1. The part of the economy controlled by technology companies is an example of the tech

sector.

2. The private **sector** has also invested in the area.

Sedentary (adj): sedentary describes someone or something that doesn't move much.

1. **Sedentary** behavior did not appear to affect young people's level of physical activity
Selective breeding: selective breeding is the process of breeding plants and animals for particular traits. Typically, strains that are selectively bred are domesticated, and the breeding is sometimes done by a professional breeder. Bred animals are known as breeds, while bred plants are known as varieties, cultigens, or cultivars. The cross of animals results in what is called a crossbreed, and crossbred plants are called hybrids. The term selective breeding is synonymous with artificial selection.

1. **Selective breeding** was used by Darwin as a springboard to introduce the theory of natural selection and to support it.

2. **Selective breeding** in aquaculture holds high potential for the genetic improvement of fish and shellfish.

Silk (n): the soft, lustrous fiber obtained as a filament from the cocoon of the silkworm; cloth made from this fiber

1. She is rich. All her clothes were made of **silk**.

Species (n): A species is a group of animals, plants, or other living things that all share common characteristics and that are all classified as alike in some manner

1. An example of a **species** is all human beings.

2. UK badgers are a protected **species**.

Surpluses (n): a surplus is an excess of something or an amount remaining once the demand for the item has been met.

1. An example of a **surplus** is when there is still rice remaining after you have enough rice for your lunch.

2. What are you going to do with this money? I plan to buy a house and keep the

surplus in the bank.

Sustain (v): to support something or to endure a trial or hardship.

1. An example of **sustaining** is **surviving** days without food or water.

Sustainable (adj): Sustainable describes something that can be continued or a practice that maintains a condition without harming the environment

1. **Sustainable** exercises can keep you strong and healthy.
2. **Sustainable** agriculture must provide the farmer with a living.

Termite(n): any of an order of pale-colored social insects having a soft body and living in colonies composed of winged forms that mate and wingless workers and soldiers that are usually sterile or immature: they are very destructive to wooden structures and are found in the temperate zones and esp. in the tropics

1. The wood was eventually eaten by **termites**, leaving a space

Workforce (n): the total number of workers in a specific undertaking; the total number of persons employed or employable

1. The **workforce** is the labor pool in employment.
2. The term **workforce** is generally used to describe those working for a single company or industry, but it can also apply to a geographic region like a city, country, state, etc.

3. A sharp increase in the nation's **workforce** is desirable for anyone.

4. The term **workforce** generally excludes the employers or management and implies those involved in manual labor.

Yields (n): the act of producing or the amount produced.

1. An example of **yield** is the interest rate earned on an investment.
2. That farmer told me that average **yields** were 470 kilos of cotton per hectare.
3. An example of **yield** is an orchard producing a lot of fruit.

B. Pre-reading questions

1. Can you define agriculture?
2. What is the role of agriculture in the development of civilization?
3. What is agricultural science?
4. What is organic agriculture?