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The importance of Engineering and the Rule of its Learning and Practice and its Relation to Juristic Provisions

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ABSTRACT

Islamic law (sharia) has taken an interest in applied sciences because of its effective impact and its great role in the advancement and progress of nations. Among those sciences is the science of engineering which Arab Muslim scholars and others have been interested in it as a science and a profession. Some of the Muslim scholars mastered it so they wrote manuscripts in it and they had engineering theories that were applied in life in different aspects. For centuries, engineering shared to the service of many sectors in the Islamic civilization such as, architecture, surveying, agriculture, industry, and mineral extraction. Now, many branches of engineering have raised due to contemporary life conditions. Islamic sharia scholars, Muslim sociologists, historians and others have concerned with explaining the definition of engineering and its importance in civilization, and the legality of its learning and practice. Because engineering is a science and a profession at the same time and achieves various benefits for society, in addition it is closely related to a range of jurisprudential rulings in worship (such as prayer, fasting, pilgrimage), and in financial transactions (such as renting and division), So its learning and practicing has a legal ruling, which is supported by various evidence from the Holy Qur'an and the Prophet's Sunnah. Now the role of engineering has appeared in the rituals of Hajj, such as: expanding the Masa'a in Sacred Mosque (Al masjid AL haram), expanding the place for throwing ritual stones, and others.

This research deals with engineering as a science and a profession, starting with its definition and its importance in the Islamic civilization in addition to the Holy Qur'an opinion about it and the legality of its practice with the Sharia evidence proving this .The research also deals with the relationship between engineering and some jurisprudential rulings in the past and now depending on the descriptive and analytical approach that is characterized by ease of presentation and reliance on the original references.

1. The Defining Of Engineering And Its Types:

A - The linguistic definition of engineering:

The word "engineering" is an Arabized Persian word, and it is taken from the word 'hindaz' or 'indazah' which means quantities ,and the letter 'Z' (Zay)is converted into the letter 'S' (**Sine**) in the Arabic language, because the letter 'D'(Dal)does not follow the letter 'Z' (Zay) in the Arabic language. Engineering is called in Greek "geometric" "Geo": means the earth and 'Metric' means measurement or Survey industry [(i)], and In the Arabic language, an engineer is the one who estimates water courses, canals (channels) and digging them [(ii)].

B- Idiomatic definition of engineering:

1 **- Ibn Khaldun defined engineering as**: "the science of studying connected quantities such as the line, the surface, and the body, or separate ones such as numbers and what presents them with subjective symptoms" [(iii)].

2 - The Academy of Arab language in Cairo defined it as: "The mathematical science that searches in lines, dimensions, surfaces, angles, quantities, or physical quantities in terms of their properties and measurement, or their evaluation and relationship to each other" [(iv)].

3 - American society for Engineering Education (ASEE) has defined it in its first report issued in 1965 AD as: "The study of mathematical information and natural sciences which are acquired through studying and experience. In addition, it can be applied wisely to reach the best way to use natural materials and forces economically to serve human beings'' [(v)].

Engineering is divided into two main branches: The first branch is; applied engineering which is based on the application of theoretical sciences (physics, chemistry, mathematics, and biology)and it includes several branches as, civil, architectural, marine, mechanical, systems and networks, aerospace engineering and others. The second is mathematical engineering which also has many branches and deals with bias relationships, forming void points to give engineering shapes, while Others see dividing it into theoretic, applied or practical [(vi)].

2. The interest of Muslims in engineering theoretically and practically

Muslims were interested in the science of engineering and were distinguished in it and because civilizations communicate with each other and transfer sciences and knowledge. Muslims learned the origins of engineering from Greece, and they translated Euclid's book on engineering and called it **'Al-Asol'** and that was during the rule of Caliph Al-Mansur then the Europeans took the Greek engineering translated from the Arabs not from the Greece.

"**Will Durant**" points out that Muslims during their glorious centuries have spared no effort in cultural communication and understanding between them and other nations and peoples as the Caliphs realized the backwardness of the Arabs in science and philosophy, and they also realized the great scientific wealth left by Greece in the Levant (**Bilad Al- Sham**) .So, they started sending to non-Arab cities asking for supplying them with the useful scientific books left by the Greeks, especially in the fields of medicine, mathematics and similar . By this way Euclid's book in Engineering reached the Arabs [(vii)].

Muslims' interest in practical engineering was more theoretical and this is clearly obvious in the palaces and buildings which has a distinct architectural character and filled the Arab and Islamic countries. They also became interested and excelled in hydraulic and mechanical engineering from the third century until the tenth century AH.

Among the exploits of Muslims in engineering are those valuable additions that they added to this science and the new matters that they introduced to their to the nations and peoples who proceeded them. The most important of which are the following:

A - Dividing the corner into three equal sections.

B - Introducing the theory of tangents and incisors in engineering science.

C- Using the art of decoration relying on engineering rules in drawing enclosures and arranging lines.

D - Combining the science of algebra and geometry.

E - Establishing analytical geometry

F- The Arab scientist and philosopher Yaqoub bin Ishaaq Al-Kindi ,from the scholars of the third century AH, wrote about dividing the triangle and the square and how to know the direction of Qibla and the architects depended on his books in digging canals and water streams between the Tigris and Euphrates (Two Rever In Iraq) [(viii)].

Throughout the history of the Islamic nation, some scientists mastered in the science of engineering in the Islamic civilization. They had theories they created, theories they criticized, machines they invented, writings they wrote,

and the and architectural applications they had carried out in useful projects for the nation in the order of rulers. Engineering also had a great importance in different Arab and Islamic capitals and cities. Ibn Khaldun referred to this when he spoke about this science in the introduction to his book The History as he said: "I know that engineering benefits its owner with illumination in his mind and integrity in his thought, because all of its proofs are very clearly ordered and clearly well organized. A mistake can hardly be found in its measurements due to its order and regularity, so it keeps thought away from mistake by practicing it''[ix].

Ibn Khaldun also quoted about some of his teachers that " Practice engineering for thought like the soap for the dress which washes and cleans it from the dirty" [x].

If we want to mention examples of Arabic names that have been affected in the science of engineering and have provided Islamic civilization with multiple benefits in this field, we don't need many pages but we will just mention some of them as follows:

1- **Musa bin Shakir sons** (ninth century AD): They are three brothers (Muhammad, Ahmad, and Al-Hassan), who lived in the third century AH (ninth century AD), They excelled in mathematics, astronomy, applied sciences and technology, and were famous for their valuable book known as **'The Tricks of Bani Musa'.** This book contains 100 mechanical installations with detailed explanations and illustrations of installation and operation methods [xi].

2- **Thabit Bin Qurra** (826 AD-901 AD): Thabit excelled in engineering science to the extent that they called him the greatest Arab engineering ever. **Will Durant** said about him that he is the greatest Muslim engineering scholar as he contributed a significant share to the progress of engineering, which paved the way for the creation of the science of calculus. Also, he was also able to solve algebraic equations by engineering methods, and was able to develop and renew the Pythagorean Theory and he had great researches and pioneering innovations in the field of analytical engineering [xii].

3- **Taqi Al-Din Al-Dimashqi** , He lived in the tenth century AH (1525 - 1585 CE), and he is the author of the book "**The High- level ways in Spiritual Instruments** " ***(Atoroq Assania fe Alat Arroheea)***in which he describes many mechanical devices such as: water clocks, automatic, sand clocks, levers and gears, water fountains, and rotating machines using steam fans [xiii].

4- There are other names such as: **Aby al-Qasim Al-Salamy Al Dimashqi** who is known as **Al-Samaisaty** (in the fifth century AH) [xiv], **Aby Bakr Bin Halabah al-Mawazani al-Baghdadi** (in the seventh century AH) [xv].

and **Al-Hasan Bin Al-Haytham** who is known to the Europeans as **Alhazin** (in the fourth and fifth Hijri) [(xvi)].

3. Engineering in the holy Qur'an

The Holy Quran have mentioned many engineering types on earth, some of them were made by God Almighty, and some were made by creatures such as humans and others. Also, some verses of the holy Qur'an came including engineering terms, from which interpreters have inferred various meanings such as circle and straight. Such as the following:

1- The shape of the earth and the mountains and what they indicate in terms of creativity and formation "**Have We not made the earth as a bed, And the mountains as pegs?''** (Holy Quran, An- Nab'a .6,7). The creation of the Earth, with its beauty, accuracy and perfection is a warning to human beings that everything should be based on right engineering foundations.

2-Building of Prophet Ibrahim and his son Ismail peace be upon them for the Sacred House which is mentioned in the verse;

And remember when Ibrahim (Abraham) and his son Ismail (Ishmael) were raising the foundation of the house (the ka 'bah in Makkah), saying, "**Our Lord! Accept (this service) from us verily, you are the All -Hearer the All-Knower**" (HolyQuran, Albakarah, 127). The rules that are mentioned in this verse are a reference to engineering because a strong construction must have bases to strengthen it in the ground.

3-Building the dam by Dhul-Qarnain during one of his trips mentioned by the Holy Quran, and his use of iron, copper, or molten lead in the construction process, which is an ancient engineering theory proved by the Holy Quran and which is being depending on in modern buildings as a kind of strengthening them . God (Allah) said through the words of Dhul-Qarnain asking people to bring him the building materials that he will use in building the dam '**Give me pieces (blocks)of iron; '' then, when he had filled up the gap between the two mountains-cliffs, he said: "Blow;" then, when he had made them (red as) fire he said, "Bring me molten copper to pour over them''** (Holy Quran,Al-Kahf,96) .

The proof; The verse proofs that they made two huge walls of stones then threw pieces of iron between them and after that , they poured molten copper over them . The interpreters disagreed about the meaning of the word **"Molten copper"** as some of them said it was melted iron, Some believed it was melted lead, and some thought it was copper [(xvii)].

4. Bees habitations (beehives) are built in a hexagonal and equal geometric way to suit bees and their lives and they vary in terms of their places. They could be in mountains, and they could be in trees, and this is a teaching from God Almighty for these small creatures. God Almighty said, **'And your Lord**

inspired the bees, saying: Take you habitation in the mountains and in the trees and what they erect'. (Holy quran, An-Nahl,68)

Al-Imam Al-Razi explained in his interpretation some aspects of the wisdom of building bees habitation by precise engineering methods that this is an instruction from God to bees and man can only build in this way by using machines such as ruler and calipers and that if bee houses were built in non-hexagonal shapes, there would be wasted spaces among them that cannot be used [(xviii)].

By studying this Quranic miracle in the habitations of bees and according to some researchers, we find that modern civil engineering has got valuable benefits from this miracle. This is because one of the foundations of civil engineering is to find the perfect specifications for the buildings such as, light weight, balance, strength, durability, and hardness which the Quranic verse that described the habitations of bees draws our attention to as follows:

A - Light weight for the structure: Bees habitations are light in weight and their walls are arranged in hexagonal form which ensures that the largest volume is covered with the least amount of material.

B - The balance of the habitation: Every three walls in the hexagonal arrangement strengthen each other together

C - The strength and hardness of the habitation: where the bees use the strong wax material.

These theories can be used in contemporary buildings that resist earthquakes and earth vibrations [(xix)].

5- One of the miracles of our master David, peace be upon him, is the formation of iron into various forms, and this refers to the science of mechanics associated with iron as the noble verses state**: "And indeed we bestowed grace on Dawud (David) from US (saying):**

O you mountains! Glorify (Allah) with him! And you birds (also)! And We made iron soft for him" "make you perfect coats of mail, and balance perfectly the rings of chain armours and work you (men) righteousness. Truly, I am All-Seer of what you do." (Holy Quran, Surat Sab'a , 10-11) .

The word " ***Coats of mail***" that is mentioned in the verse means shields or gears for many interpreters, and the word "rings of chain armours" is the nails that are needed to adjust the appropriate dimensions and sizes for the manufacture of shields [(xx)].

This is called the study of mechanical systems in the current era. So, we notice that the Holy Qur'an refers to the most important components of mechanical engineering which are: study and this is in (Balancing perfectly the rings of

chain armours), the manufacture of machinery in (Making coats of mail), and the ease of manufacturing in (making iron soft) [(xxi)].

6- The Qur'an use of the term "Calamity" in the words of God Almighty: "**On them be the calamity evil**" (At-Taubah 98 and Al-Fath 6).

Some scholars commented on Ibn Arafa's ,the interpreter, methodology of interpreting this verse for his using to the principles of engineering depending on the proof of God's almighty words;"**On them be the calamity of evil**" as He said that the torment that happened to them had no end because of using the word calamity(circle in mathematics) which according to engineering has no start or end [(xxii)].

7- the Quranic use of the word 'the straight' in the verse **'Guide us to the Straight Way'** Surat Al-Fatihah, 6 **.** Al-Razi said 'I know that the engineering specialist defined the straight line as the shortest line between two points. So, it is shorter than all curved lines. .It is as if the worshipper meant to say the word "straight way" especially for many reasons. The first is; It is the closest and the shortest of the lines and I am hopeless, so no thing suits my weakness except the straight way. The second is that the straight line is only one kind but the curved are many and some of them are similar that I suspect my way. Unlike the straight, it is not similar to others, so it is farther from suspicion and closer to safety. The third is that the straightway leads to the intended aims but the curved doesn't" [(xxiii)].

4. The ruling on learning engineering and practicing it as a profession.

Engineering as one of the sciences and one of the professions, so the ruling on its learning and practice is based on the benefits which it introduces to the nation. The jurists judge the learning of sciences according to one of two famous rulings. Either that science is an individual obligation or a collective obligation. The difference between them is that the individual obligation means that everyone must do it individually such as learning the basics of religious matters like; purity, prayer and similar .As for the collective duty, if some people did it, the rule falls off the others such as the funeral prayer for the dead. We will mention briefly and generally the most important opinions which jurists said in this matter and what is related to engineering in particular.

• **Al-Hasakfi**(***Mazhab Hanfe***) **said**: "Learning science is an individual duty according to Man's needs for his religion, and what is increased to benefit the others is a collective duty" [(xxiv)].

• **Ibn al-Najjar** (***Mazhab Hanbale***) **said**: "And the collective duty, in the opinion of the majority, is obligatory for all and it is a matter that Law (Sharia) is concerned with implementing it regardless of who does it, including crafts and industries" [(xxv)].

• **As for engineering, Ibn Abdin** (***Mazhab Hanfe***) **said**: "Engineering and mathematics are permitted and only those who are afraid to beyond them to illegal sciences are prevented from practicing it"([xxvi]).

This means that there is no problem in learning engineering unless the person is going to use it badly, only then it is forbidden in that case because of bad intent.

In general, it could be said that the importance of learning any science or practicing a profession is depending on various legal criteria the most important of which are: How legitimate is that profession? Is it agree with Sharia Law or not? And to what extent does it relate to the general aims of Islamic law? And to what extend does the society need it? How much effort are being made in it? As some contemporaries say: "The more useful a profession or craft is, the greater the favor of this profession over others which are limited in useful and impact." [(xxvii)].

Based on what mentioned above, it could be said that learning engineering and practicing it as a profession is one of the collective duties and It is not a duty for all people but It's enough to do it a certain group in every society. But if all Muslim left learning engineering and do not care about learning it at the time they have necessary needs for it, then the ruler has the right to force some people to learn and practice it in order to improve the nation's circumstances and progress in order not to need to non-Muslims to set up buildings and projects for them.

5. Legislative evidences for learning engineering and practicing it as a profession

There are many proofs from the Holy Qur'an, the purified Sunnah of the Prophet, which proofs the legality of learning and practicing engineering and we will mention them as follows:

1. The Holy Quran:

1-God Almighty says : **'He brought you forth from the earth and settled you therein'** (Holy Quran, Hud ,61).This verse proofs that reforming the earth and its reconstruction is a legitimate matter which is fulfilled by what's a man doing on earth in terms of crafts and industries. And engineering is one of these industries that build, create, repair, and people need it in many matters of their lives.

2 - The words of God Almighty about the Islamic nation ''**And make ready against them all you can of power, including steeds of war (tank, planes, missiles, artillery''**(Holy Quran Al-Anfal,60) . And also, the verse ''**You (true believers in Islamic monothesim, and real followers of profit muhammed and his Sunnah) are the best of the people ever raised up for mankind''** (Holy Quran,Al-Imran,110).

To achieve this goodness and for the ummah to be strong, it must achieve advancement in science and knowledge. Also, I t should compete other nations through paying attention to the technical and professional side. Engineering is one of the useful sciences that achieve all of this, and the progress of Muslims in it raises their status.

2. The Prophetic Sunnah:

1- There are some prophetic hadiths that order work and gain from the work of the hand, such as: **"No one has ever eaten food better than he eats from the work of his own hand, and David, Gog's messenger,was eating from the work of his own hand**."([xxviii]). And engineering is an applied profession that is predominantly by hand work and supervision of workers.

2- Engineering is a profession or a craft that Man masters and God Almighty loves the owner of a craft and earning him an honorable gain. This is proved by the prophetic hadith **"God loves the professional.''** [xxix] As for the person who does not have work to earn his living, he is a burden on society and has no benefit.

3- The construction of buildings has a reward from God Almighty to Man. This is proved by what was mentioned in the hadith of the prophet: "**Whoever builds a building without injustice, neither aggression, or planted a plant without injustice, nor aggression, He would have had a constant reward for what God's creations benefit from it**" [xxx] . So if the engineer has done his work perfectly intending to get closer to God Almighty and cover people and fulfill their needs for housing, then he will be rewarded for that.

3. The reasonable:

- When Muslim learn and practice engineering, this prevents them from seeking help from non-Muslims because God (Allah) almighty ordered the Muslim to strive and seek to spend his interests and to reform his own affairs. The more Muslims are abstinent from others, the more they will have a position and self-respect among the nations.

- The Prophet's interest in engineering is another proof of the importance of engineering and the importance of learning it and working out with it. Moreover, we find in the heritage of the Islamic nation, according to what some historian scholars and biographers said, what indicates the knowledge of the Prophet and his experience in some aspects of this science. As Ibn Saad has mentioned in his book '***Major classes' 'Al-Tabakat, Al- Kobra'*** That the Prophet cut down the houses in Al- Medina Almonawarah and this means that he divided their buildings and determined their locations after the migration (Hijra) and he was the one who determined the location of the companion Othman bin Maza'un'house where Ibn Saad narrated about Abdullah bin Utbah He said: **"**The prophet

has determined the location of Uthman Ibn Mazaun and his brothers' house today in Medina" [(xxxi)].

We also should not forget the ingenuity of the Prophet in choosing the location of the Prophet's Mosque (Al-Masjid Al-Nubui**)** in Madinah after migration (Hijra) and he planned it, made its accessories, and how was it built and the materials that were used in it. All this indicates the knowledge of the Prophet and the Companions in engineering and his use of its rules and foundations.

In general : Using engineering in fields that are beneficial to the nation such as building housing, mosques, schools and institutes, hospitals, arches, dams and bridges, all of this is urged by Islamic law.

6. The relationship between engineering and some jurisprudential provisions (in the past and now):

The science of jurisprudence is a related science to the legal rulings that rule the behavior of people as all the actions that people do are related to one of five basic classes of rulings which are; obligation, prohibition, preferable, hatred, permissibility or allowable and this includes worships, transactions, judgments, politics , morals, and the personal issues ,etc. The legal rulings need some sciences that contribute in solving some of their problems. Where we find that the science of arithmetic is related to Al-Zakat and inheritance, and the science of surveying is related to prayer in the matters of Qiblah . Also, astronomy is related to prayer and fasting in the matters of the determining the times of prayer and fasting, etc. Among the rulings that are related to the science of engineering are the following:

A - The relationship of engineering to the calculation of areas in renting(Ijara),

Al-Qarafi (***Mazhab Malike***) said in an issue: "A man hired a man to dig him a well that is ten by ten in length, width and depth in each side. But he dug a well which was five by five therefore, they disagreed about his fare. So the inexperienced jurists said that he worth half fare because he did half of the work while experienced jurists said he worth eights because he did eights" .

Then he said solution to this problem through engineering [(xxxii)]. By studying this issue, we find that the science of engineering has contributed a great share in solving aproblem that is related to renting in work, and that lack of experience in this aspect may lead to injustice for people and the loss of their rights as a worker may take less or more than he deserves.

B - The relationship of engineering with Qiblah direction :

According to all jurists facing the Qiblah direction is a basic condition of prayer validity. Qiblah means The Holy Kaaba or the Sacred Houseand the jurists have a detailed explanation in this matter, its summary is that: whoever is inside the Grand Mosque must face the Kaaba itself and that is why you find

the prayer in the Grand Mosque is around the Kaaba, and whoever is outside the Grand Mosque must face the direction of the Kaaba that is inside the mosque, And whoever is far from the Holy Mosque as well as those who are outside Makkah Al-Mukarramah will receive the entire Sacred Mosque, and whoever is farther from that searches for the whole of Makkah Al-Mukarramah direction and so on.

Imam Ibn Abdeen, the Hanafe school of thought, has explained in details the methods of facing the Qiblah during prayer using well-known engineering terms Such as: surface, right angle, straight line, column, acute angle, obtuse angle and so on. In addition, he clarified the controls for facing the direction of the Qiblah according to the different methods [(xxxiii)].

C- The relationship of engineering to the division of real estate:

Engineering is used as a method of division such as the division of houses, lands, and similar real estate. Where Imam Al-Qarafi Al-Maliki indicates the need to bring specialists in engineering to take over the division of the property between the heirs and similar issues and that the opinion of those specialists and their testimony in this field is considering it a legetmatic ruling [(xxxiv)].

And it being written in the division of shops and what is similar as Al-Qarafi says:

“The shareholders brought two engineers who are experts in land, its value and distributing it, namely So and So, the engineers on the real estate in the country So to the mentioned shops and asked them to divide it between them In a fair way according to Sharia law” [(xxxv)].

D - The relationship of engineering to inheritance and wills:

Al-Rafi'i who is a Shafi’i scholar said that there are mathematical issues in inheritance that can be extracted by engineering methods, and then he mentioned the issue and how to divide it by engineering methods [(xxxvi)].

E - The relationship of engineering to planning streets, markets and the like (planning science):

Some scholars said that it was mentioned in the biography of Caliph Umar bin Al-Khattab that when he commanded the building of Basra and Kufa; They divided the streets into twenty cubits wide and forty cubits long and the alleys (plural of alley) are nine cubits, and the sectors of sixty cubits and they built Al- Jameh mosque in the middle so the streets branch out of it and this was by the order of Omar. This proof the importance of engineering even in construction in the past, now and in the future [(xxxvii)].

F- Among the aspects of the contemporary need for engineering in legal matters are the following:

- **Construction of the Jamarat Bridge:** In 2006 AD, the construction of a special bridge began in a perfect multi-level engineering form that provides a streamlined passage for pilgrims to throw stones without facing the difficulties and obstacles that were caused by the intensity of the crowd.

- **Expansion of the Walkway (mas'a) :** The Administrator for the Pilgrimage (Hajj) affairs have built an expanded walkway with several floors with a unique engineering building, as well as the buildings of the mosque and the place of circumambulation to facilitate for the pilgrims and Umrah performers [(xxxviii)].

- **commitment to Islamic standards for building homes:** Among these criteria is the design of the exterior door in a way that prevents the neighbors from being exposed, as well as the windows and openings, and the design of rooms in a way to facilitate facing and receiving the direction of the Qiblah. In additions, the toilets should not be designed in the direction of Qibla. As well as refraining from harming the neighbor by blocking the sun, beneficial winds, or pleasant landscapes, and considering the rights and needs of the disabled, considering safety and security standards Compliance with safety and security standards [(xxxix)]. In addition to that, there should be distance from the sources of pollution, diseases and epidemics, and to be near the sources of services.

All the aforementioned has its proof from the texts of the Prophet's Sunnah, as the Prophet took into account all of that. It was reported that he had chosen a suitable location to build a bathroom, where Muhammad Ibn Ubayd Allah Ibn Aby Rafi` narrated about his father on the authority of his grandfather who said that the prophet passed by a place and said: "Yes, this is the place of the bathroom, so a bath was built in it" [(xl)].

This indicates the Prophet's knowledge of some engineering and construction matters and explains the state of the building and the sources of air blowing [(xli)].

In general, engineering now has become of a great importance and indispensable for societies as It is involved in many matters of our life and Islam has given it a great attention.

7. Conclusion:

After we finished this research, its most important results can be mentioned as follows:

• Engineering science is one of the ancient sciences that many nations and peoples knew before Islam, and people in different historical eras, including the Islamic eras, excelled in it.

• That the Arabs have added theories, foundations and rules to engineering in addition to what the predecessors wrote about this science.

• That the Noble Qur'an has referred in some of its verses to the science of engineering theoretically and practically and this indicates the interest of Islamic law in beneficial sciences, and that contemporary engineering has benefited from the Qur'an in this aspect.

• The Islamic civilization raised the status of the engineering profession and needed it in many of its affairs and This was reflected in the various archaeological installations that filled Islamic cities and capitals.

• Learning engineering and practicing it is one of the legitimated permissible matters which is supported by the various legal evidence, and that sometimes learning it may be a duty if the nation (ummah) needs it urgently.

• Some jurisprudence rulings in worship, financial transactions and others are related to engineering and the jurists have mentioned examples of these rulings in their books.

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