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MODERN FORENSIC SCIENCE TECHNOLOGIES IN THE USA

Today we see enormous changes being brought about by science. The whole context of life is changing. As a matter of fact, looking back at least half century with which I have been more or less concerned and some of you also see that enormous changes have been brought about chiefly by science and technology.

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The area of forensic science is changing very fast by the new technologies and methods. Nowadays use of DNA tests, high-performance liquid chromatography, mass spectrometry, 3-D computer imaging, and other sophisticated technologies are used by scientists to reconstruct the offence and the mishap. The modern forensic science can differentiate trace element and organic materials down to the level of merely a few hundred molecules. [1]

Today, it seems that [forensic science careers](#) are everywhere. Specialists are brought out and put on the stand in high profile trials, experts are constantly interviewed for analysis on the news, and television shows such as *Crime Scene Investigation* (CSI) portray the glory and intrigue of crime scene investigations.

New advances in forensic science technology are taking investigation to an entirely new level, assisting investigators as they solve crimes that had previously stumped even the top minds in the game. Intriguing technologies are spreading rapidly around the globe, helping investigators and forensic experts solve the most brutal and challenging crimes today, including rape, murder, and arson.

As technology infiltrates every aspect of our lives, it is no wonder that solving crimes has become almost futuristic in its advances. From retinal scanning to trace evidence chemistry, actual forensic technologies are so advanced at helping to solve crimes that they seem like something from a science fiction thriller. With all this forensic technology, it's no wonder that this field is one of the fastest

growing in the USA. Shows like *CSI* and [Naval Criminal Investigative Service](#) (NCIS) have made most of the forensic science techniques used today common knowledge. You might think that virtually the whole gamut of forensic technology is old hat to today's savvy viewer. In fact, there are a number of incredibly cool forensic technologies that you probably never knew existed. [2]

First of all we observe the method of [Alternative Light Photography](#). For a forensic nurse, being able to quickly ascertain how much physical damage a patient has suffered can be the difference between life and death. Although they have many tools at their disposal to help make these calls quickly and accurately, Alternative Light Photography is one of the best tools to help see damage even before it is visible on the skin. A camera such as the Omnicrome uses blue light and orange filters to clearly show bruising below the skin's surface. [3]

It is also necessary to refer to [High-Speed Ballistics Photography](#) method. Ballistics specialists often use high-speed cameras in order to understand how bullet holes, gunshot wounds and glass shatters are created. Virtually anyone, from a crime scene investigator to a firearms examiner, can operate a high-speed camera without any additional education or training. [3]

[X-ray photoelectron spectroscopy](#) is well-known technique, that has now developed to the point where it can identify a chemical signature on a fiber's surface and, in doing so, may help to solve crimes. Suppose a minuscule fiber from a killer's clothing is found at the scene. *X-ray photoelectron spectroscopy (XPS)* can now work with the smallest of samples and gives results in mere minutes. Detectives could soon have a way to trace leads from clothing that would have been impossible before. [5]

[DNA Sequencer](#): Most people are familiar with the importance of DNA testing in the forensic science lab. Still, most people don't know exactly what DNA sequencers are and how they may be used. Most forensic scientists and crime lab technicians use what's called DNA profiling to identify criminals and victims using trace evidence like hair or skin samples. In cases where those samples are highly degraded, however, they often turn to the more powerful DNA

sequences, which allows them to analyze old bones or teeth to determine the specific ordering of a person's DNA nucleases, and generate a "read" or a unique DNA pattern that can help identify that person as a possible suspect or criminal. [41]

3D Forensic Facial Reconstruction: Although this forensic technology is not considered the most reliable, it is definitely one of the most interesting available to forensic pathologists, forensic anthropologists and forensic scientists. In this technique, 3D facial reconstruction software takes a real-life human remains and extrapolates a possible physical appearance. In order to run this type of program, you should have a Bachelor's Degree in Forensic Science, a Master's Degree in Forensic Anthropology or a Medical Degree with an emphasis on Forensic Examination and Pathology. [41]

Conclusion. The Present World is the World of advance science and technology and of new researches in every field. The rate at which the globe has progressed is commendable. Advance technology has given the World an effective and precise tool for the purpose of criminal investigation. Presently forensic science plays vital role in crime and criminal detection. There are various techniques relating with the important role in detection of crime. [Alternative Light Photography](#), [High-Speed Ballistics Photography](#), [X-ray photoelectron spectroscopy](#), [DNA Sequencer](#), 3D Forensic Facial Reconstruction etc. are the main modern techniques in the field of forensic science in the USA which play pivotal role in criminal investigation to find out the crime and criminals.

Список використаних джерел:

1. Willow Dawn. 10 modern forensic technologies [Електронний ресурс] - www.forensicscolleges.com
2. Brooke Kaelin. How technology has shaped forencsic science [Електронний ресурс] - www.forensicsciencedegree.org
3. Forensic science [Електронний ресурс] - en. wikiped. org/wiki/F orensic

4. Timothy Roufa. Forensic science: a modern history [Электронный ресурс] - www.thebalance.com/forensic-science-a-modern-history

5. The new forensic science [Электронный ресурс] - <https://www.nlm.nih.gov>