More than half of jobs in the modern world use a computer. The vast majority of people aged 18-30 are ‘digitally fluent’, accustomed to using smartphones, smart TVs, tablets and home assistants, in addition to laptops and computers, simply as part of everyday life. Yet, how many of these users actually understand what’s going on under the hood? Do you know what your computer or smartphone can tell someone about you? Do you know how easy it might be for someone to access and exploit that data? Do you know what actually happens when a file is deleted? Do you want to know more about Digital Forensics and Incident Response? If you answered ‘yes’ to any of the above, this course is for you. This is an introductory course aimed at people from non-technical backgrounds, to give an understanding, in layman’s terms, of how files are stored on a computer or smartphone. It explains what Digital Forensics and Incident Response are and the art of the possible when professionals in these fields are given possession of a device.

This course is intended to be a starting point in the SANS catalogue and provide a grounding in knowledge, from which other, more in-depth, courses will expand.

IT’S NOT JUST ABOUT USING TOOLS AND PUSHING BUTTONS

Digital forensics has evolved from methods and techniques that were used by detectives in the 1990’s to get digital evidence from computers, into a complex and comprehensive discipline. The sheer volume of digital devices and data that we could use in investigative ways meant that digital forensics was no longer just being used by police detectives. It was now being used as a full forensic science. It was being used in civil legal processes. It was being used in the military and intelligence services to gather intelligence and actionable data. It was being used to identify how people use and mis-use devices. It was being used to identify how information systems and networks were being compromised and how to better protect them. And that is just some of the current uses of digital forensics.

However digital forensics and incident response are still largely misunderstood outside of a very small and niche community, despite their uses in the much broader commercial, information security, legal, military, intelligence and law enforcement communities.

Many digital forensics and incident response courses focus on the techniques and methods used in these fields, which often do not address the core principles: what digital forensics was no longer just being used by police detectives. It was now being used as a full forensic science. It was being used in civil legal processes. It was being used in the military and intelligence services to gather intelligence and actionable data. It was being used to identify how people use and mis-use devices. It was being used to identify how information systems and networks were being compromised and how to better protect them. And that is just some of the current uses of digital forensics.

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Many digital forensics and incident response courses focus on the techniques and methods used in these fields, which often do not address the core principles: what digital forensics and incident response are and how to actually make use of digital investigations and digital evidence. This course provides that. It serves to educate the users and potential users of digital forensics and incident response teams, so that they better understand what these teams do and how their services can be better leveraged. Such users include executives, managers, regulators, legal practitioners, military and intelligence operators and investigators. In addition, not only does this course serve as a foundation for prospective digital forensics practitioners and incident responders, but it also fills in the gaps in fundamental understanding for existing digital forensics practitioners who are looking to take their capabilities to a whole new level.

“FOR308 is packed with technical information and covers aspects necessary for those taking their first steps in the digital forensics as well as those who think about leading teams in the field. An overall good balance of theory to practice, delivered in a very professional manner.”

— Wiktor Kardacki, 6point5
## Section Descriptions

### SECTION 1: Introduction to Digital Investigation
The volume of digital information in the world is growing at a scarcely fast rate. In fact, 90 percent of the digital data that exists worldwide today was created within the last two years and it’s not slowing down with, 2.5 quintillion bytes of new data created each and every day. If you are investigating any matter, whether it is a crime, an administrative or civil issue, or trying to figure out how your network was compromised, you need evidence. If you are gathering intelligence you need information. The simple reality is that these days the vast majority of potential evidence or information that we can use, whether it is for investigations, court, or intelligence purposes, is digital in nature. To effectively conduct digital investigations, one needs to understand exactly what digital evidence is, where to find it, the issues affecting digital evidence, and the unique challenges facing digital evidence. This will allow one to understand the crucial role that digital forensics plays with regards to digital evidence.

**TOPICS:** Understanding Digital Investigation; Digital Forensics 101; Digital Evidence Overview; Sources and Digital Evidence; Digital Evidence Challenges

### SECTION 2: Digital Forensics
Digital forensics is the core set of principles and processes necessary to produce usable digital evidence and uncover critical intelligence. Digital forensics is crucial to ensure accurate and usable digital evidence, but it is important to understand exactly what it is, what it can do, and how it can be used. If you are a user of digital forensics and digital evidence, understanding exactly how digital forensics works will enable you to better make use of digital forensics and digital evidence. If you are a manager or supervisor of a digital forensic capacity, this will help you understand exactly how it should be functioning and how to build and maintain it. Finally, if you are a prospective digital forensics practitioner or an existing one, this will equip you with the foundational knowledge and skills that form the core of the digital forensic profession.

**TOPICS:** Digital Forensics Principles; Documentation and Reporting; Quality Assurance in Digital Forensics; Digital Forensics Challenges

### SECTION 3: Incident Response
Incident Response is the core set of principles and processes necessary to allow an organization to successfully respond, react and remediate against potential attack scenarios. Digital forensics deals with the preservation, examination and analysis of digital evidence. However, Incident Response is often the preceding activity that leads to the requirement to conduct a forensic investigation. If not executed properly, the Incident Response processes and team have the ability to inadvertently disrupt or damage subsequent forensic activities. It is therefore a vital part of any investigation. Digital Forensics and Incident Response therefore go hand-in-hand and are often referred to by the acronym DFIR. If you are a prospective or current digital forensics practitioner, understanding exactly how incident response works will enable you better leverage these teams before, during and after investigations to obtain the best and most useful evidence and improve reporting.

**TOPICS:** Introduction to Forensic Readiness; Incident Response Standards; Incident Response Challenges

### SECTION 4: Digital Evidence Acquisition Essentials
Acquiring digital evidence is a crucial component in any investigation. Digital forensics is about finding answers, and if we cannot get to the evidence that we need, which is often stored on devices, in memory, on the wire or wireless, or in the Cloud, then we will never be able to get the answers we seek. Getting the digital evidence and selecting the appropriate method to obtain it can mean the difference between success and failure in an investigation. The acquisition of digital evidence has evolved over the years and the way of doing it may not always be the best or most effective way of getting the evidence and may actually compromise an investigation. By understanding the various strategies and methods that we have available to us to acquire digital evidence means that informed decisions can be made as to the best method to use to acquire evidence in a given situation or environment.

**TOPICS:** Forensic Acquisition Principles and Standards; Forensics Acquisition Processes; Acquisition Challenges

### SECTION 5: Digital Forensic Analysis
The key purpose of digital forensics is to find answers, and it is through the analysis process that digital forensics transforms raw data into either evidence or intelligence that we can use to answer the questions that we need answered. The use of technology is so integral to our day to day activities that it allows us an unprecedented opportunity to reconstruct what has happened in the past, to learn what is happening in the present, and even predict what may happen in the future, all based on the data available to us. By understanding digital forensic analysis, we can see how we can ask the right questions in our investigations and intelligence efforts, how we can critically examine and analyze the data at hand in a manner that can withstand scrutiny and finally, understand the types of answers we can get.

**TOPICS:** What Can Forensic Analysis Prove; Planning the Examination; The Art and Science of Forensic Analysis; Forensic Examination and Analysis Standards; Forensic Examination and Analysis Challenges

### SECTION 6: Documenting and Reporting in Digital Forensics
Digital forensics is at its core about getting answers to questions, whether as evidence or intelligence. So, it is important that we can get the answers that we find in our investigations to the right people so that they can make decisions and act on what is found in the digital forensics process. It is crucial that we are able to effectively communicate these answers to those people who need them, in a manner that is useful to them, and to be able to effectively support our answers. Not only must we be able to effectively communicate, but it is important that the users of these answers understand what our various reports means and how they can use them effectively. Without effective communication and understanding of what is communicated, all effort expended in the digital forensic process is lost.

**TOPICS:** Presenting Your Findings; Legal Evidence; Testifying in Court

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"The course contains good theory mixed with real-life examples."
— Waldemar Blakely, DHS