

## Content

| Course Code | Course Name                | Semester | Theory | Practice | Lab | Credit | ECTS |
|-------------|----------------------------|----------|--------|----------|-----|--------|------|
| IT 520      | Cybernetics and Blockchain | 1        | 4      | 0        | 0   | 3      | 8    |

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| Prerequisites          |  |
| Admission Requirements |  |

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| Language of Instruction | English                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Course Type             | Compulsory                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Course Level            | Masters Degree                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Objective               | Cybernetics and blockchain computing are the content of this course.                                                                                                                                                                                                                                                                                                                                                                           |
| Content                 | Week 1 Introduction to the Cyber World<br>Week 2 What is Cryptology?<br>Week 3 Hash Functions<br>Week 4 Cryptography with Open Keying I<br>Week 5 Cryptography with Open Keying II<br>Week 6 Midterm Exam<br>Week 7 Distributed Application Architecture and P2P Networks<br>Week 8 The Concept of Cryptocurrency<br>Week 9 Data Storage and Distribution<br>Week 10 Blockchain Development Platforms and APIs<br>Week 11 Blockchain Ecosystem |

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| References | <ol style="list-style-type: none"> <li>1. Kriptografi ile Sayılar Teorisine Giriş, James S. Kraft ve Lawrence C. Washington, Palme Yayınevi, 2022.</li> <li>2. Şifre Kitabı, Simon Singh, Buzdağı Yayınları, 2020.</li> <li>3. Şifrelerin Matematiği: Kriptografi, Canan Çimen, Sedat Akleylek, Ersan Akyıldız, ODTÜ Yayınevi, 2007.</li> <li>4. Uygulamalı Şifreleme ve Şifre Çözme Yöntemleri, Nuri Aral ve Ömer Örenç, Pusula Yayıncılık, 2017.</li> <li>5. Şifrelerin Gizemli Serüveni, Stephen Pincock ve Mark Frary, Ketebe Yayınları, 2021.</li> <li>6. Gizli Diller ve Kodlar, Tarihçeleri ve Teknikleri, Albrecht Beutelspacher, Runik Kitap, 2021.</li> <li>7. Basit Şifreleme Teknikleri, Dr. Şaban Can Şenay, Efeakademi Yayınları, 2022.</li> <li>8. Bitcoin Hakkında Güncel Herşey, Alp İda, Bizim Gezegen Yayıncılık, 2017.</li> <li>9. Bitcoin, Paradan Sonraki En Büyük İcat, E. Emre Aksoy, Abaküs Yayıncılık, 2018.</li> <li>10. Nasıl Bitcoin Zengini Olunur?, Ali Abaday, Madrabaz Kitap, 2018.</li> <li>11. Bitcoin Devrimi, Serkan İnci, İsmail Alpen, Elma Yayınevi, 2018.</li> <li>12. Bitcoin Rehberi, Ian Demartino, Epsilon Yayınevi, 2018.</li> <li>13. Bitcoin, Prypto, Nobel Akademik Yayıncılık, 2018.</li> <li>14. Blok Zinciri, Harvard Business Review Press, Optimist Yayın Grubu, 2020.</li> <li>15. Blok Zinciri: Gelecekteki Her Şey, Stephen P. Williams, Kaknüs Yayınları, 2020.</li> <li>16. Bitcoin, 50 Yıllık Hayal, Saadettin Konukseven ve Tuna Özen, MediaCat Kitapları, 2021.</li> <li>17. Nedir Bu NFT?, Mesut Bingül, Nemesis Kitap, 2023.</li> <li>18. Dijital Dünyanın Anahtarı, Kripto Paralar İle İlgili Merak Edilen Soruların Cevapları, 100 Soru 100 Cevap, Dr. Hilal Sarı Özgün, Nobel Bilimsel Eserler, 2024.</li> <li>19. Olay ve Kişileriyle Popüler Ekonomi Sözlüğü, Şafak Altun, Hayat Yayıncılık, 2007.</li> <li>20. Bir Günde Ekonomist Nasıl Olunur?, John Charles Pool ve Ross M. LaRoe, Etkileşim Yayınları, 2008.</li> <li>21. Ünlü Ekonomistler Ansiklopedisi, Prof. Dr. Orhan Şener, Beta Basım Yayım, 2015.</li> <li>22. 100 Soruda Ekonomi El Kitabı, Prof. Dr. Sadun Aren, İmge Kitapevi Yayınları, 2018.</li> <li>23. Örneklerle Kolay Ekonomi, Dr. Mahfi Eğilmez, Remzi Kitabevi, 2019.</li> <li>24. Tarihsel Süreç İçinde Dünya Ekonomisi, Dr. Mahfi Eğilmez, Remzi Kitabevi, 2019.</li> <li>25. Türkiye Ekonomisi, Dr. Mahfi Eğilmez, Remzi Kitabevi, 2019.</li> <li>26. Büyük Ekonomistler, Phil Thornton, Türkiye İş Bankası Kültür Yayınları, 2019.</li> <li>27. Kapitalizm, Dan Cryan ve Sharron Shatil-Piero, Say Yayınları, 2019.</li> <li>28. Paraya Yön Verenler, Muhammet Cüneyt Özcan, Anonim Yayınları, 2020.</li> <li>29. Gençlerle Baş Başa, Kapitalizm, Jean Ziegler, Yordam Kitap, 2024.</li> </ol> |
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### Theory Topics

| Week | Weekly Contents                 |
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| 1    | Introduction to the Cyber World |
| 2    | What is cryptography?           |

| Week | Weekly Contents                                       |
|------|-------------------------------------------------------|
| 3    | Hash Functions                                        |
| 4    | Cryptography with Public Key I                        |
| 5    | Cryptography with Public Key II                       |
| 6    | Midterm Exam                                          |
| 7    | Distributed Application Architecture and P2P Networks |
| 8    | The Concept of Cryptocurrency                         |
| 9    | Data Storage and Distribution                         |
| 10   | Blockchain Development Platforms                      |
| 11   | Blockchain Ecosystem                                  |