# *MAT² IT Courses by Year*

| Period | IT Course Topics |
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| **Year One** | |
| P1 | Fundamentals of Information Systems |
| P1 | Fundamentals of System Support |
| P1 | Handling Customers in a Technical Environment |
| P2 | Networking Concepts |
| P2 | Personal organization on a Technical Team & Project Management |
| P2 | Microsoft Server Administration |
| P2 | *SEMINAR: Theory of Troubleshooting, log analysis, performance monitoring* |
| P3 | Build a Dynamic Website |
| P4 | Network Administration |
| **Year Two** | |
| P5 | Intermediate Algebra |
| P5 | Java for Enterprise |
| P5 | *SEMINAR: Power Shell* |
| P6 | Introduction to Database Systems |
| P6 | Advanced Java Programming |
| P7 | .NET / Web Systems Development |
| P7 | *SEMINAR: Linux/Unix* |
| **Year Three** | |
| P8 | Internet Security |
| P8 | System Security |
| P9 | Computer Forensics |

| DACUM Reference | MAT$^2$ IT Task Analysis |
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| **A** | **Infrastructure** |
| **AA** | **Monitor and Track** |
| **AA1** | Understand theory underlying monitoring reporting systems |
| **AA2** | Setting up monitoring checks |
| **AA3** | Create performance report for system |
| **AA4** | Monitor server/network performance |
| **AA5** | Capacity and planning tracking |
| **AA6** | Utilization tracking |
| **AB** | **Technical support - Reactive** |
| **AB1** | Repair/software installations - minimum operating system |
| **AB2** | Perform diagnostics |
| **AB3** | Theory of troubleshooting |
| **AB4** | Open cases related to the alarms |
| **AB5** | Contact via phone the site to determine validity of alarm |
| **AB6** | Respond to internal/external customer requests |
| **AB7** | Reset passwords after credential verifications |
| **AB8** | Incident management process - as defined by ITIL |
| **AB9** | Problem management process - as defined by ITIL |
| **AB10** | Auditing server security |
| **AB11** | Interact with external vendors to achieve solution |
| **AB12** | Interact with customers |
| **AB13** | Gather information and document problems/solutions |
| **AB14** | Assess/prioritize for incident magnitude (scale, individual vs. system) |
| **AB15** | Perform remote fixes via the network based on written procedures |
| **AB16** | Perform Online research - bug fixes |
| **AC** | **Strategy & Policy/Initiation - Proactive** |
| **AC1** | Write procedures relevant to tasks |
| **AC2** | Mass deployment of new machines to customers |
| **AC3** | Asset Management: updating/tracking status |
| **AC4** | Install and configure platforms/servers - cloud or on-premise |
| **AC5** | Operating systems configuration settings and integration w/ applications |
| **AC6** | Operating systems configuration settings and integration w/ peripherals |
| **AC7** | Set up and install (deploy) hardware - platforms/servers |
| **AC8** | "Big Picture" understanding - system architecture, organization, literacy |
| **B** | **Software** |
| **B1** | Locate and organize data |
| **B2** | Data storage methodology |
| **B3** | Search data/indexing methodology |
| **B4** | Move data between applications/databases |
| **B5** | Visualize/present data |
| **B6** | Cleansing/validating data |
| **B7** | Analyze data |

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| **B8** | Database design |
| **B9** | Front-end design HTML5/CSS/JavaScript |
| **B10** | Integrate with data sources (AFI) |
| **B11** | Write code (advanced) |
| **B12** | Write script, code logic/algorithms |
| **B13** | Online research - solutions to coding and scripting challenges |
| **B14** | Utilize software to code |
| **B15** | Back end design .NET/Ruby/Python/Java |
| **B16** | Understand error messages |
| **B17** | Crafting and implementing test scenarios |
| **B18** | Write Bug report |
| **B19** | Test code |
| **B20** | Run regression and load tests |
| **B21** | Debug code |
| **B22** | Software development life cycle - applications and terminology |
| **B23** | Data relationships |
| **B24** | Database implementation |
| **B25** | Monitor user access |
| **B26** | Database optimization |
| **C** | **IT Security** |
| **C1** | Physical security |
| **C2** | Social engineering |
| **C3** | Logical security |
| **C4** | Diagnose/locate origin of attack |
| **C5** | Computer forensics |
| **C6** | Understand firewalls |
| **C7** | Input/consult on security of programs in development |
| **C8** | Understand software/applications development |
| **C9** | Mobile security - nonphysical (bluetooth, hotspots) |
| **C10** | End device security theory |
| **C11** | Resolve Virus infection |
| **C12** | Understand and diagnose types of threats |
| **C13** | Threat prevention |
| **C14** | Network Foundations - IP address theory |
| **D** | **Customer Service** |
| **D1** | Demonstrate Active listening |
| **D2** | Demonstrate empathy |
| **D3** | Speak in terms that are user-friendly/relatable - audience appropriate comm. |
| **D4** | Teamwork |
| **D5** | Communicating problem solving strategy (Updates: know, don't know, follow-up) |
| **D6** | Effective written communication/documentation - customer service (problem, steps, solution) |
| **D7** | Identify appropriate communication/reporting channel |
| **D8** | Create and understand Needs Analysis |
| **C** | **Organization/Project Management** |
| **C1** | Write a project plan, schedule - task and component parts |

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| **C2** | Time management |
| **C3** | Resource management |
| **C4** | Risk management |
| **C5** | Plan personal schedule with understanding of personal role in org. structure |
| **C6** | Competitive Overview (software,etc.) - hands on, pros and cons |
| **C7** | Competitive overview - evaluate a platform/technology |
| **C8** | Escalation methodology - timeline, skill set, angry customer |
| **D** | **Math & Foundational IT/CS** |
| **D1** | Logic |
| **D2** | Algorithms |
| **D3** | Matrices/Arrays |
| **D4** | Systems of linear equations (vector algebra) |
| **D6** | Discrete math |
| **D8** | Statistics and analysis - "telling the story" with stats |
| **D9** | Root cause analysis |
| **D10** | Critical thinking |
| **Pre** | **Boot Camp** |
| **Pre** | Foundations of Computer Science |
| **Pre** | "Big Picture" understanding - data relationships |
| **Pre** | Foundations of Programming |
| **Pre** | Front end languages |
| **Pre** | Back end languages |
| **Pre** | Foundations of IT |
| **Pre** | Servers |
| **Pre** | Networks |
| **Pre** | Common services |
| **Pre** | Database |
| **Pre** | Virtualization |
| **Pre** | Professional habits |
| **Pre** | Set up and install (deploy) hardware - Individual (laptop, desktop, mobile device) |
| **Pre** | Online Research and communities |
| **Pre** | Security Ethics |