Mobile Application Design and Development

Ontario College Diploma
2 Years
Ottawa Campus

Academic Year: 2020/2021
Program Code: 1515X01FWO

Our Program

Turn your interest in mobile development into a career needed across a number of different industries.

The two-year Mobile Application Design and Development Ontario College Diploma program prepares you to enter the expanding and evolving fields of mobile web and application development. Design mobile website interfaces across different platforms and devices. Learn how to build native applications for mobile devices and use different technologies and programming languages. Topics covered include:

- user interface (UI) design
- user experience (UX) design
- responsive web design
- full-stack web development
- hybrid mobile application development
- native mobile application development
- entrepreneurial business skills

Emphasis is placed on a hands-on approach to developing sites and applications.

In your final semester, prepare for industry by developing a mobile solution for a real-world client. Experience working in teams and participate in the analysis, design, implementation, testing and deployment of your mobile solution.

Upon graduation, you may find work in all levels of government, as well as with start-ups and a wide variety of market sectors including technology, healthcare, business, marketing, finance, education and communications. Some available jobs include:

- mobile app developer
- full-stack developer
- UX designer/developer
- web designer
- web developer
- interaction designer/developer
- QA tester

SUCCESS FACTORS

This program is well-suited for students who:
• Are interested in working with computers and mobile devices, such as smartphones and tablets.

• Enjoy the challenge of working with evolving mobile technology.

• Have good problem-solving skills and enjoy solving logic problems.

• Enjoy non-repetitive tasks and the challenge of developing new and creative solutions for mobile applications.

• Can work independently and as a productive member of a team.

• Are organized in their work and pay attention to detail.

• Are committed and dedicated.

• Are proficient with basic computer skills, such as keyboarding and the use of office software suite.

**Employment**

Upon graduation, you may find work in all levels of government, as well as with start-ups and a wide variety of market sectors including technology, healthcare, business, marketing, finance, education, and communications. Some available jobs include: Mobile app developer, Full-Stack developer, UX designer/developer, UX researcher, UI designer/developer, Web designer, Web developer, Interaction designer/developer, QA tester.

**Learning Outcomes**

The graduate has reliably demonstrated the ability to:

• Identify requirements and implement mobile solutions.

• Promote mobile technology solutions using business communication and marketing skills.

• Create effective user interfaces that leverage evolving mobile device capabilities.

• Design and develop websites that deploy to different devices and platforms.

• Design and develop cross-platform applications built with rich-media and HTML-based technologies.

• Design and develop device-specific, native applications.

• Research and apply various software development kits (SDKs), frameworks and toolkits.

• Integrate database and server-side technologies to provide complete mobile development solutions.

• Build, test, and deploy secure mobile solutions using appropriate network technologies.

• Collaborate in a team-based, mobile development project.

• Identify and apply discipline-specific practices that contribute to the local and global community through social responsibility, economic commitment and environmental stewardship.

**Program of Study**

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<tr>
<th>Level: 01</th>
<th>Courses</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>MAD8010</td>
<td>Digital Citizenship</td>
<td>42.0</td>
</tr>
<tr>
<td>MAD9011</td>
<td>Mobile Design Fundamentals</td>
<td>42.0</td>
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<tr>
<td>MAD9013</td>
<td>Cross-Platform Web Design</td>
<td>56.0</td>
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<tr>
<td>MAD9014</td>
<td>Cross-Platform Application Development I</td>
<td>70.0</td>
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<tr>
<td>MAD9112</td>
<td>Fundamentals of Computer Hardware and Networking</td>
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### Level: 02 Courses

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<tr>
<th>Course Code</th>
<th>Course Name</th>
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<tbody>
<tr>
<td>DSN2100M</td>
<td>Design Thinking</td>
<td>42.0</td>
</tr>
<tr>
<td>ENL1813T</td>
<td>Communications I</td>
<td>42.0</td>
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<tr>
<td>MAD9020</td>
<td>User Interface Design</td>
<td>42.0</td>
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<tr>
<td>MAD9021</td>
<td>Introduction to Object Oriented Programming</td>
<td>56.0</td>
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<tr>
<td>MAD9022</td>
<td>Cross-Platform Application Development II</td>
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<tr>
<td>MAD9124</td>
<td>Mobile API Development</td>
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### Level: 03 Courses

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<th>Course Name</th>
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<tbody>
<tr>
<td>ENL8720</td>
<td>Technical Communication for Technicians</td>
<td>42.0</td>
</tr>
<tr>
<td>MAD9034</td>
<td>User Experience Design</td>
<td>56.0</td>
</tr>
<tr>
<td>MAD9132</td>
<td>Android Application Development</td>
<td>70.0</td>
</tr>
<tr>
<td>MAD9135</td>
<td>Developing HTML5 Mobile Applications</td>
<td>70.0</td>
</tr>
<tr>
<td>MAD9137</td>
<td>iOS Development</td>
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### Level: 04 Courses

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<th>Course Name</th>
<th>Hours</th>
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<td>MAD9042</td>
<td>Mobile Industry Trends</td>
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<tr>
<td>MAD9143</td>
<td>Business for the Mobile Industry</td>
<td>42.0</td>
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<tr>
<td>MAD9145</td>
<td>Applied Project</td>
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<tr>
<td>MAD9146</td>
<td>Windows Development for Mobile</td>
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### Choose one from equivalencies: Courses

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<th>Hours</th>
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<td>GED1515</td>
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### Fees for the 2020/2021 Academic Year

Tuition and related ancillary fees for this program can be viewed by using the Tuition and Fees Estimator tool at [https://www.algonquincollege.com/fee-estimator](https://www.algonquincollege.com/fee-estimator).

Further information on fees can be found by visiting the Registrar’s Office website at [https://www.algonquincollege.com/ro](https://www.algonquincollege.com/ro).

Fees are subject to change.

**A REQUIRED** high-end MacBook Pro laptop that meets the following MINIMUM requirements:

- 15-inch screen
- i7 processor
- 16GB RAM
- 512GB SSD storage

The cost of the MacBook Pro is currently approximately $3,500. Apple offers a student discount of $300 on new MacBook Pros.

**A REQUIRED** Android Smartphone or iPhone that is less than two years old. (price varies depending on device and carrier)

We highly recommend that students purchase an adapter hub that will connect from the MacBook Pro USB-C to USB-A, HDMI, and ethernet.

We highly recommend that students purchase enough extended Applecare protection for their MacBook Pro to cover at least the 2 years of the program.

**Special note for OSAP students:**

Please note that OSAP only provides $500 towards the purchase of any laptop and the required MacBook Pro for this program is over $3,000.

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### Admission Requirements for the 2021/2022 Academic Year
College Eligibility

- Ontario Secondary School Diploma (OSSD) or equivalent. Applicants with an OSSD showing senior English and/or Mathematics courses at the Basic Level, or with Workplace or Open courses, will be tested to determine their eligibility for admission; OR
  - Academic and Career Entrance (ACE) certificate; OR
  - General Educational Development (GED) certificate; OR
  - Mature Student status (19 years of age or older and without a high school diploma at the start of the program). Eligibility may be determined by academic achievement testing for which a fee of $50 (subject to change) will be charged.

Program Eligibility

- English, Grade 12 (ENG4C or equivalent).
- Mathematics, Grade 12 (MAP4C or equivalent).
- Applicants with international transcripts must provide proof of the subject specific requirements noted above and may be required to provide proof of language proficiency. Domestic applicants with international transcripts must be evaluated through the International Credential Assessment Service of Canada (ICAS) or World Education Services (WES).
  - IELTS-International English Language Testing Service (Academic) Overall band of 6.0 with a minimum of 5.5 in each band; OR TOEFL-Internet-based (iBT) Overall 80, with a minimum of 20 in each component: Reading 20; Listening 20; Speaking 20; Writing 20.

Should the number of qualified applicants exceed the number of available places, applicants will be selected on the basis of their proficiency in English and mathematics.

Admission Requirements for 2020/2021 Academic Year

College Eligibility

- Ontario Secondary School Diploma (OSSD) or equivalent. Applicants with an OSSD showing senior English and/or Mathematics courses at the Basic Level, or with Workplace or Open courses, will be tested to determine their eligibility for admission; OR
  - Academic and Career Entrance (ACE) certificate; OR
  - General Educational Development (GED) certificate; OR
  - Mature Student status (19 years of age or older and without a high school diploma at the start of the program). Eligibility may be determined by academic achievement testing for which a fee of $50 (subject to change) will be charged.

Program Eligibility

- English, Grade 12 (ENG4C or equivalent).
- Mathematics, Grade 12 (MAP4C or equivalent).
- International applicants must provide proof of the subject specific requirements noted above along with proof of either: (IELTS / TOEFL) IELTS-International English Language Testing Service (Academic) Overall band of 6.0 with a minimum of 5.5 in each band; OR TOEFL-Internet-based (iBT) Overall 80, with a minimum of 20 in each component: Reading 20; Listening 20; Speaking 20; Writing 20.
  - Applicants with international transcripts must provide proof of the subject specific requirements noted above and may be required to provide proof of language proficiency.

Should the number of qualified applicants exceed the number of available places, applicants will be selected on the basis of their proficiency in English and mathematics.

Application Information
MOBILE APPLICATION DESIGN AND DEVELOPMENT
Program Code 1515X01FWO

Applications to full-time day programs must be submitted with official transcripts showing completion of the academic admission requirements through:

ontariocolleges.ca
60 Corporate Court
Guelph, Ontario N1G 5J3
1-888-892-2228

Students currently enrolled in an Ontario secondary school should notify their Guidance Office prior to their online application at http://www.ontariocolleges.ca/.

Applications for Fall Term and Winter Term admission received by February 1 will be given equal consideration. Applications received after February 1 will be processed on a first-come, first-served basis as long as places are available.

International applicants please visit this link for application process information: https://algonquincollege.force.com/myACint/.

For further information on the admissions process, contact:

Registrar’s Office
Algonquin College
1385 Woodroffe Ave
Ottawa, ON K2G 1V8
Telephone: 613-727-0002
Toll-free: 1-800-565-4723
TTY: 613-727-7766
Fax: 613-727-7632
Email: mailto:AskUs@algonquincollege.com

Additional Information

Programs at Algonquin College are Bring Your Own Device (BYOD). To see the BYOD requirements for your program, please visit: https://www7.algonquincollege.com/byod/.

Although basic computer skills are recommended, programming experience is not a requirement to enter the program.

For more information, please email the Program Coordinators: mailto:Steve.Griffith@algonquincollege.com OR mailto:Eric.Torunski@algonquincollege.com.

Course Descriptions

DSN2100M Design Thinking

Human-centred approaches are among the best methods of generating innovative solutions for people at work, at home or within your community. Design thinking is a user-centred method of creative problem solving applicable any time you need to generate new ideas. It is about embracing mindset shifts and tackling problems from the user’s perspective. Students learn the five-step process while involving the user each step of the way. Through research discussions and analysis, students work, first independently, then with a team, to emphasize with their users, define a problem, and then ideate, prototype and test an original solution that places people at the heart of a challenge.

Prerequisite(s): none
Corerequisite(s): none

ENL1813T Communications I

Communication remains an essential skill sought by employers, regardless of discipline or field of study. Using a practical, vocation-oriented approach, students focus on meeting the requirements of effective communication. Through a combination of lectures, exercises, and independent learning, students practise writing, speaking, reading, listening, locating and documenting information and using technology to communicate professionally. Students develop and
Mobile Application Design and Development

strengthen communication skills that contribute to success in both educational and workplace environments.

Prerequisite(s): none
Corerequisite(s): none

ENL8720 Technical Communication for Technicians

Clear, concise and detailed communication is essential for technical workplaces. Students plan and execute a variety of formal and informal visual, oral and written communication tasks. Exercises and activities foster confidence and competence in workplace communication.

Prerequisite(s): ENL1813T
Corerequisite(s):none

GED1515 General Education Elective

Students choose one course, from a group of general education electives, which meets one of the following four theme requirements: Arts in Society, Civic Life, Social and Cultural Understanding, and Science and Technology.

Prerequisite(s): none
Corerequisite(s):none

MAD8010 Digital Citizenship

Increasingly, students are experiencing online components as part of their course delivery. Blended and online courses require specific skills and knowledge essential for student success in these environments. Significant emphasis is placed on the social aspects of learning, time management and study skills, socio-cultural aspects of learning, community building, group work and networking. The content is scaffolded using three delivery modes: face-to-face, blended and online. Students identify motivations for learning, understanding and level of ability, and self-directed learning competencies. Students also develop online communication skills, explore effective ways to communicate in an online environment, and learn how to give constructive and proactive feedback to others even when they do not share the same point of view.

Prerequisite(s): none
Corerequisite(s):none

MAD9011 Mobile Design Fundamentals

Students are introduced to mobile design fundamentals and graphical user interface design tools. The design concepts include user interface visual elements, principles, accessibility and usability. Students gain production experience and skills implementing mobile industry-standard graphics and design tools, which help them create effective interfaces for mobile-first web and mobile applications. Students apply hands-on learning with different software packages to create visual elements, icons, splash graphics, scalable vector graphic (SVG) animations and wireframes for mobile user interfaces.

Prerequisite(s): none
Corerequisite(s):none

MAD9013 Cross-Platform Web Design

Technologies on the web evolve quickly. Every year brings new devices and with them new capabilities. These devices present many challenges and opportunities to web developers. Students review fundamentals of web development using hypertext markup language (HTML), and cascading style sheets (CSS), with a focus on developing responsive and mobile websites. Multiple IDEs are introduced and used to complete hands-on projects.

Prerequisite(s): none
Corerequisite(s):MAD9014
MAD9014 Cross-Platform Application Development I

While developing native applications for mobile devices holds many advantages, not every application requires direct access to native capabilities and there are many ways web developers can build applications using the programming skills they already possess. Students use HTML, CSS and Javascript to build applications which can quickly be deployed to multiple mobile platforms, such as iPhone and Android. Designing to conserve battery life is introduced as a concept in this course. Using mobile marketplaces to publish and market applications is introduced.

Prerequisite(s): none
Corerequisite(s): MAD9013

MAD9020 User Interface Design

Students learn how to create functional, efficient and enjoyable interfaces. They gain an appreciation for the challenges of building websites and applications that remain functional across different devices and platforms. Usability that allows people to complete tasks on any device, any time, is emphasized. Focus is placed on practical application of students’ design software experience in the creation of mobile application interfaces.

Prerequisite(s): MAD9011
Corerequisite(s): none

MAD9021 Introduction to Object Oriented Programming

Students learn the fundamentals of object-oriented programming within the context of mobile application development. Emphasis is placed on the concepts of Classes, Encapsulation, Polymorphism and Inheritance. Concepts are taught while using multiple IDEs and multiple programming languages, in preparation for native mobile application development.

Prerequisite(s): MAD9014
Corerequisite(s): none

MAD9022 Cross-Platform Application Development II

HTML-based web technologies, including a wide variety of Javascript toolkits and APIs, are used to create Hybrid Mobile applications that leverage native device capabilities. More advanced approaches to application development with Javascript are investigated. Designing to conserve battery life on mobile devices is emphasized.

Prerequisite(s): MAD9013 and MAD9014
Corerequisite(s): none

MAD9034 User Experience Design

Going beyond the basics of graphics and user interface fundamentals, students learn how to combine these elements to create intuitive, efficient and enjoyable products. Students are introduced to a user-centered approach to designing mobile applications. Students begin with user research and build toward creating interaction design specifications in the form of wireframe documents. Topics such as information architecture, navigation and orientation, and interaction design principles are discussed and applied.

Prerequisite(s): MAD9020
Corerequisite(s): none

MAD9042 Mobile Industry Trends

This course investigates a variety of current topics related to the mobile industry and app development. While the specific course topics change each year to reflect technological developments in the industry, they can include recent trends in software development and testing, laws concerning data storage and privacy, new hardware technologies in mobile devices, sensor technology, Internet of Things, virtual and augmented reality, and cloud APIs.
Prerequisite(s): none
Corerequisite(s): none

MAD9112 Fundamentals of Computer Hardware and Networking

Students learn how network-enabled devices communicate with each other, what protocols are and why they are important. Differences in desktop, laptop and mobile device hardware, as well as some of the practical differences between the Windows, Linux and Mac operating systems are also exposed. Students work individually, as well as with other students to complete tasks.

Prerequisite(s): none
Corerequisite(s): none

MAD9124 Mobile API Development

Students enhance their JavaScript skills to become productive with Full-stack development. They use a hands-on approach to build APIs using Node.JS and a variety of tools, frameworks, libraries and packages. The creation of these modern APIs also requires the students to develop skills with persistent scalable database storage systems. Project work culminates with students creating APIs to be used with websites and mobile applications. Students work individually as well as with other students to complete tasks.

Prerequisite(s): MAD9013 and MAD9014
Corerequisite(s): none

MAD9132 Android Application Development

Students learn to develop mobile applications for the Android mobile platform. Students use the Android application programming interface (API) and Android software development kit (SDK) for hands-on development of deployable mobile applications. Designing to conserve battery life on mobile devices is emphasized.

Prerequisite(s): MAD9021
Corerequisite(s): none

MAD9135 Developing HTML5 Mobile Applications

Students leverage acquired HTML5 and Javascript skills to create both web and hybrid apps. Students learn to develop web apps using modern Frameworks such as React, Angular JS, Vue, Backbone or Ember. Students also learn to develop hybrid apps using Frameworks such as Cordova, PhoneGap and React Native. The use of task automation and productivity tools is also explored. Hands-on development of applications for multiple platforms is the goal. Designing to conserve battery life on mobile devices is stressed.

Prerequisite(s): MAD9022 and MAD9124
Corerequisite(s): none

MAD9137 IOS Development

Students use the Swift language within the standard Mac OSX development environment to create native applications for the iPhone and iPad. Working together in teams, students build and test applications. User interface requirements and building for a better user experience is stressed.

Prerequisite(s): MAD9021
Corerequisite(s): none

MAD9143 Business for the Mobile Industry

The mobile landscape from a business point of view is discussed. Topics to be covered include business planning, revenue models, analytics, as well as other entrepreneurial skills. Students work together to explore the importance of networking within the context of mobile development projects.
MAD9145 Applied Project

Working in teams, students experience the analysis, design, implementation, testing and deployment of a mobile solution for a real-world client. Important topics from throughout their program of study are applied in this course. Faculty advisors facilitate student teams to demonstrate their skills in the applied project. Student teams make a technical presentation to their faculty advisors and participate in a public showcase of projects.

Prerequisite(s): MAD9034 and MAD9132 and MAD9135
Corerequisite(s): none

MAD9146 Windows Development for Mobile

Windows development can be accomplished through a variety of languages. Leveraging prior skills in creating mobile applications with object-oriented concepts, students focus on developing Windows mobile applications using XAML and C#. Designing to conserve battery life on mobile devices is stressed.

Prerequisite(s): MAD9021
Corerequisite(s): none