RRC POLYTECH Program and Course Catalogue

FULL-TIME | WINNIPEG LOCATIONS

Aerospace Manufacturing

Overview

- Five-month certificate
- September and January entry dates
- Stevenson Campus, Winnipeg
- Training is 25% theory based and 75% hands-on learning based

Description
Aerospace Manufacturing was collaboratively developed by Boeing Canada, Bristol Aerospace, and Red River College Polytechnic to prepare students for positions as skilled production workers in aerospace composite manufacturing.

The program consists of nine separate courses, all of which have theory-based lectures followed by practical project-based workshops. You complete the theory and hands-on components of each course before moving onto the next.

Each course has been streamlined to provide you with maximum, effective learning over the shortest possible training interval.

Admission Requirements

Your Academic History
If your academic history includes any of the following, please visit My Education for important information: post-secondary studies at an institution other than Red River College Polytechnic; Modified (M), English as an Additional Language (E), or GED high school courses; or home schooling; international secondary (high school) studies.

The college requires transcripts verifying your complete academic history including any public or private high school, college, university, or technical institute you have attended.

Please check the Program Overview page, to see if this program is for Manitoba residents only.

DOCUMENT SUBMISSION

Upload Through Your Future Student Account

- Scan your document(s) and save the file. Ensure you keep your original documents as the College may request to see them at any time.
- Go to apply.rrc.ca and log in.
- Click on your application, then Supplemental Items & Documents.

If you do not have a Future Student Account or require assistance, please contact our Student Service Centre at 204-632-2327.

Internationally Educated Applicants - visit www.rrc.ca/credentials for credential assessment information.

Submission of required documentation indicating proof of completion of admission requirements is due within 15 days of applying unless otherwise noted in the program's admission requirements.

However, if you apply within 6 weeks of the program start date, admission requirements are due within 5 days of applying.

We recommend you have strong academic, technical, and communication skills.

Regular Admission Requirements

1. Grade 12
   - Submit proof of graduation from or enrolment in Grade 12, including one credit in each of the following courses:
     - Grade 12 English (40S)
     - Grade 12 Math (40S)
   - If you provide proof of enrolment at time of application, your official final grades indicating successful completion must be submitted by July 15 for fall enrolment or by the deadline specified in your admission letter
   - If you are required to complete an English language assessment, do not submit your transcripts until requested to do so. See English Language Requirements (ELRs) for more information.
     and
2. English Language Requirements (ELRs)
   - Answer this question to determine if you meet this program's ELRs:
     Have I successfully completed 3 years of full-time high school (secondary) education in Canada, the United States, or an ELR exempt country where English was the language of instruction?
     - If YES, you meet English language requirements. Apply and then submit your transcripts* for review
       or
     - If NO, submit proof of meeting an ELRs option. If you choose the English language assessment option, review this program's approved assessments and required levels.
       or
     - If you completed all of your education in Canada, the United States, or an ELR exempt country in English but you did not graduate high school, submit your transcripts* for review.
   - * If your transcripts are from the USA or an ELR exempt country, we will assess an International Credentials Assessment Fee to be paid before your transcripts will be reviewed.

Mature Student Admission Requirements
If you are 19 years of age or older and have been out of high school for a minimum of one year at time of application, and you do not meet the regular admission requirements, you may apply under the Mature Student admission requirements.

1. Grade 12 Courses
   - High school graduation is not required, but you must have successfully completed or be enrolled in:
     - Grade 12 English (40S)
     - Grade 12 Math (40S)
   - If you provide proof of enrolment at time of application, your official final grades indicating successful completion must be submitted by July 15 for fall enrolment or by the deadline specified in your admission letter
   - If you are required to complete an English language assessment, do not submit your transcripts until requested to do so. See English Language Requirements (ELRs) for more information.
     and

2. Meet Regular Admission Requirement 2

English Language Assessments

⚠ The College reserves the right to modify this information without notice or prejudice.
ASSESSMENT RESULTS MUST BE DATED NO MORE THAN TWO YEARS PRIOR TO YOUR APPLICATION DATE!

Approved English Language Assessments

English Language Assessment	Minimum Scores for Certificates, Diplomas and Advanced Diplomas, and Post Graduate Certificates, Post-graduate Diplomas	Minimum Scores for Bachelor Degrees and Creative Communication
CAEL Online or In-Person	Overall band score of 60	Overall band score of 70 and Writing of 60
IELTS Academic Level	Overall 6.0 and No band below 5.5	Overall 6.5 and No band below 6.0
Password Skills	Overall 6.0 and No band below 5.5	Overall 6.5 and No band below 6.0
LINC Certificate	7	8
Duolingo Language Test	115 and above+ with a min. of 95 in each section	125 and above with a min. of 100 in each section
New English for Academic and Professional Purposes	Successful completion of the program 5 (min 70%)	Successful completion of the program 5 (min 70%)
PTE	54 overall Min 50 in each skill	60 overall Min 55 in each skill band
TOEFL-ibt Academic Level	80 (20L, 20S, 19R, 21W)	90 (22L, 22S, 22R, 24W)
Academic English Program for University and College Entrance Program (AEPUCE)	Successful Completion	Successful Completion
CELBAN	N/A	N/A

Who Should Enrol?

Consider this program if you have a general interest in aviation and have good manual dexterity, strong reading skills, a good work ethic with attention to detail, and the ability to follow detailed instructions.

You should be physically fit and be able to stand for extended periods of time.

Locations, Dates and Fees

Next Estimated Term 1 Start Date (subject to change)

Location	Start Date	
Stevenson	Jan 14, 2026	Apply Now

Costs (estimates only; subject to change)

Program/Student Fees	
Year 1	
	$5,779.00
Other Fees	
Year 1	
	$150.00[1]

[1] CSA Approved Safety Shoes; two shop coats

Students may apply for financial assistance through the Manitoba Student Aid program. For general information on applying please call 204-945-6321 or 1-800-204-1685, or visit their website at www.manitobastudentaid.ca, which also includes an online application. For detailed information, please visit one of the RRC Polytech Student Service Centres or call 204-632-2327. Applicants requiring financial assistance should complete their student loan applications well in advance of the class start date.

Courses and Descriptions

Year 1	
Term 1	Credit Hours
AVIA-1045 Introduction to Aerospace Manufacturing	2
AVIA-1046 Honeycombe Core Fabrication	4
AVIA-1047 Composite Fabrication	2
AVIA-1048 Trim Including Inspection	1
AVIA-1049 Sheet Metal and Composite Assembly	6
AVIA-1050 Exterior Finish	1
AVIA-1051 Blueprint Reading Including Process Specifications	2
AVIA-1052 Safety and Tool Handling	2
AVIA-9003 TOWES Preparation and Exam	2
CNTC-1009 Composite Repair	2

AVIA-1045
Introduction to Aerospace Manufacturing

Basic mathematics - demonstrate the knowledge to use mathematical numbers in different forms to fabricate composite and assembly structure; ability to add, subtract, multiply, and divide; use of fractions and decimals. *Aerodynamics* - demonstrate the knowledge of basic aircraft aerodynamics; aircraft flight; concepts of aerodynamics; lift, eight, thrust, drag theories; axes of flight theories; demonstrate knowledge of aerospace manufacturing regulations; air regulations (DOT, FAA, Boeing compliance).

AVIA-1046
Honeycombe Core Fabrication

Identify types of care (materials, classes, grades); ability to trim core (rough trim, net trim, CNC trim); ability to chamfer core (includes chamfer radius); stabilize core; recognize and use potting compounds (BMS 5-28); ability to pot and bond splice; heat forming; identify core (label and buy-off).

AVIA-1047
Composite Fabrication

Cloth kitting - identify prefab material matrix (low and high temp); storage and handling life specifications; calculate exposure hours; hand cut kits; CNC cutting and labeling. *Composite fabrication* - lay up and bagging techniques; applicable tooling; accurately complete all required paperwork; define required acronyms, abbreviations, and terminology. *Cure* - determine correct curing procedure (oven or autoclave); ability to debag.

AVIA-1048
Trim Including Inspection

Trim - identify tool setback; use hand rout fixtures and routers; recognize necessity for CNC fixtures and trimming; ability to deburr; ability to chamfer and edge radius. *Inspection* - receiving inspection; inspection methods (drawing, visual, dimensional, NDI); self inspection and acceptance; composite vs. metal detail inspection; close tolerance hole inspection; rejection tag process; material test and retest process (Lab); precision measurement (Q.C. specific).

AVIA-1049
Sheet Metal and Composite Assembly

Assembly - align and attach parts; use temporary fasteners; trim and fit parts; drill, ream and countersink holes; disassemble components and parts; dress and deburr parts; assemble parts and structural fasteners; remove parts/components from jigs or fixtures. *Fastener installation* - select fasteners, lay-out hole patterns; drill, ream, and countersink holes; install corrosion treated fastener holes (wet installation); set and buck rivets; install swage threadless collars; install panel and cowling fasteners; install blind nuts; install blind bolts and rivets.

AVIA-1050
Exterior Finish

Exterior finish - material matrix (primers, conductive coatings and enamel); application of coatings; curing of coatings; inspection of coatings. *Corrosion control* - apply water displacement compounds (Alodine/Anodize); apply leveling compounds; edge seal details (composite, metal, resin, primer). *Surface Preparation* - material matrix (conditioners and pinhole fillers); cure surface materials; finish product. *Shipping* - details of protective wrapping of parts or shipping; identify parts; airworthiness acceptance procedures.

AVIA-1051
Blueprint Reading Including Process Specifications

Blueprint reading - define the content of automated parts lists and advanced drawing change notices; interpret drawings, dimensions, notes (detail, assembly, installation); types of drawings and views; types of lines and arrangements of views; blueprint arrangement; interpret dimension elements, systems, angles, purposes; types of tolerance; aerodynamic smoothness requirements; assigned engineering numbers and block numbers. *Process specifications* - define content of material specs (BMS); content of process spec (BAC); recognize and use standard specs; process specifications departures (PSD's); spec control (liaise with Manufacturing Engineering); familiarize with Quality Assurance Manual (purpose, content, control).

AVIA-1052
Safety and Tool Handling

Safety Health & Environmental Affairs (SHEA) - awareness of Health & Safety hazards; how to handle hazardous materials (MSDS); compliance with safety regulations; use of personal protective equipment; operation of emergency safety equipment; knowledge of housekeeping practices (5S's); maintenance of tools and equipment; awareness of fire hazards. *Tools and equipment* - select and operate hand tools; select and operate power tools; select and operate shop equipment; maintain hand and power tools. *Precision measurement* - sue rulers; use dial calipers; use micrometers; feeler gauges; hole gauges. *Tooling fabrication* - define fabrication techniques (models vs. Catia); define types of tools; tool sustainment; lay-out and fabricate a cutting pattern.

AVIA-9003

TOWES Preparation and Exam

This course will prepare the student to take the TOWES exam.

CNTC-1009
Composite Repair

Approved repair instructions (D6-53900); clean damage by sanding, grinding, and routing; prepare patching by step/taper sanding; shape/size core for replacement; replace cored areas with potting compounds; bond core replacement; lay-up repair plies using pre-preg cloth; cure repairs.

Computer/Laptop Requirements

Online learning is a critical component of course delivery in all Red River College Polytechnic programs. To ensure each student has the tools they need to achieve their academic goals, all Red River College students require, at a minimum:

- Operating System: Windows 10;
- Capable to run Microsoft Office 365:

- 1.6 GHz or faster, 2-core
- Memory: 4 GB RAM; 2 GB RAM (32-bit)
- Hard disk: 4 GB of available disk space
- Display: 1280 x 768 screen resolution
- Graphic: Graphics hardware acceleration requires DirectX 9 or later, with WDDM 2.0 or higher for Windows 10
- Browser: The current version of Microsoft Edge, Internet Explorer, Safari, Chrome, or Firefox.

- 10-inch screen minimum;
- Front-facing camera
- WI-FI capable.

Please note that any anticipated costs are not included in Books and Supplies estimates.

Recognition of Prior Learning

Recognition of Prior Learning (RPL) is a process which documents and compares an individual's prior learning gained from prior education, work and life experiences and personal study to the learning outcomes in College courses/programs. For more information, please visit www.rrc.ca/rpl.

Other Information

Where is Stevenson Aviation and Aerospace Training Centre located?
There are two Stevenson Aviation and Aerospace Training Centre locations -- one in Winnipeg and one in Southport. This program is being offered at the Winnipeg location at 2280 Saskatchewan Avenue.

Note: there is currently limited Winnipeg Transit service to the Centre.

Employment Potential

The aerospace manufacturing industry offers rewarding employment and career challenges in a growing dynamic industry.

Graduates of the program have the opportunity to enter a number of companies in the Winnipeg market that repair or manufacture composite structures.

Academic Advising Service

Our academic advising service can provide information about our full-time programs, explain program admission requirements, and help you select the right program to meet your career and academic goals. We can also connect you with helpful people, resources, and supports.

- For more information visit academic advising.
- If you are an Indigenous student, you can contact an Indigenous Admissions Advisor.
- If you are an international student, you can contact International Education.

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