CERTIFICATION EXAMINATION BLUEPRINT

GENERALIST SONOGRAPHER EXAMINATION

This blueprint applies to the examination as of January 2022 and is based on NCP 6.1

This blueprint may be modified prior to future examinations, in which case advance notice will be provided.

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Purpose of Examination Blueprints

As part of the requirements to qualify for certification as a Generalist Sonographer, candidates will be required to successfully complete both the Core Sonographic Skills Examination and the Generalist Sonographer Examination.

Each examination (Core and Generalist) has a separate Examination Blueprint. The purpose of an Examination Blueprint is to describe how the examination should be developed. Examination Blueprints are based on the Sonography Canada National Competency Profiles (NCP) and identify the competencies upon which questions will be based (these are referred to as "examinable competencies"). Item numbers and references to Appendices (included in this document) that appear in the Examination Blueprints refer to the corresponding items in the NCP. **As of January 2022, the content of each examination is based upon NCP Version 6.1.**

The Examination Blueprint also identifies the total number of questions in the examinations, and the approximate distribution of those questions among the examinable competencies. This distribution is listed as a percentage range for each grouping of examinable competencies.

The Generalist Sonographer Examination consists of 240 questions. The total time allowed is 240 minutes. There will be a 10-minute break during the exam.

How Should Candidates Use the Examination Blueprint?

As described above, examination blueprints are intended to describe how the examination is to be developed. They are not designed explicitly for study purposes but do provide valuable information about the examination content, the number of questions and how content is distributed within the exam. Candidates should refer to the relevant appendices in the NCP for a list of the structures relevant to each content area.

Assessment Environments

The National Competency Profiles (NCPs) designate the *Assessment Environment* for each competency which denotes the educational setting for assessing student proficiency. The appropriate environment is determined by national survey responses. Educators and student assessors are expected to have a comprehensive understanding of the NCPs. Employers should be familiar with the NCPs to manage entry-level expectations.

The following assessment environments are found in the relevant Appendices:

Assessment Environment	Definition	Criterion for Student Success
A (Academic)	Academic education takes place in a classroom or through guided study involving cognitive and / or affective learning.	Academic assessment consistent with the definition of entry-level competence.
S (Simulation)	Simulation involves cognitive, affective and / or psychomotor learning in a setting that simulates a practice activity.	Simulated performance consistent with the definition of entry-level competence.
C (Clinical)	Clinical education involves cognitive, affective and / or psychomotor learning where learners work directly with human patients in a setting designed to provide patient care. Learners are supervised throughout their clinical education, in a manner that facilitates their development of independent clinical abilities while ensuring safe, effective and ethical patient care.	Reliable clinical performance consistent with the definition of entry-level competence.

Generalist Sonographer Examination Blueprint

The Generalist Sonographer Examination includes 240 questions: 90 Abdominal questions, 35 Superficial Structure questions, 15 Peripheral Venous questions, 65 Obstetrics questions and 35 Gynecology questions		

Examinable Competencies		% Range
2.2	**Professional judgement**	**1 - 3%**
2.2h	Identify and respond to urgent sonographic findings.	
3.2	**Clinical procedures**	**0.5 - 2%**
3.2a	Understand role in interventional procedures.	
3.3	**Related techniques and procedures**	**1 - 3%**
3.3a	Measure blood pressure.	
3.3c	Perform palpation of areas of interest.	
3.3d	Perform provocative/dynamic maneuvers.	
3.3h	Understand the application of transrectal imaging.	
3.3i	Understand when to perform a transperineal / translabial scan.	
3.3j	Perform contrast-enhanced imaging.	
4.2	**Operation of Equipment**	**30 - 35%**
4.2a	Orient and manipulate transducer.	
4.2b	Perform sonographic examination of structures of interest using knowledge of sonographic principles, instrumentation and techniques listed in Appendices A, B, C, and D.	
4.2c	Monitor output display indices and adjust power output in accordance with "as low as reasonably achievable" (ALARA) principle.	
4.2e	Identify artifacts.	
4.2h	Perform sonographic examinations using 3-D imaging.	

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Examinable Competencies			% Range
5.1	**Examination Planning**		**14 - 18%**
5.1a	Interpret history, signs & symptoms and other relevant information.		
5.1c	Modify scope of examination based on clinical history.		
5.1d	Formulate sonographic scanning strategies.		
5.1e	Integrate knowledge of anatomy and disease processes.		
5.2	**Correlation of relevant diagnostic data**		**2 - 4%**
5.2a	Correlate results from laboratory tests, aspirations and biopsies.		
5.2b	Correlate results from diagnostic imaging (radiography, computerized tomography, nuclear medicine and magnetic resonance studies).		
5.2c	Correlate results from obstetric testing (amniocentesis, chorionic villus sampling, chromosome analysis, cell free DNA, dilation and curettage, non-stress testing).		
5.3	**Examination**		**30 - 35%**
5.3e	Evaluate images for orientation, identification, and labeling.		
5.3f	Evaluate images for quality.		
5.3g	Recognize sonographic appearance of normal structures.		
5.3h	Recognize artifacts and normal variants.		
5.3i	Differentiate artifact and normal variants from anatomic and pathologic findings.		
5.3j	Recognize and investigate abnormal findings.		
5.3k	Modify examination based on sonographic evidence, clinical information, resource implications and other contextual factors.		
5.4	**Technical analysis**		**10 - 15%**
5.4b	Formulate impression based on findings.		
5.4d	Use spatial reasoning to interpret images.		
5.4e	Identify and prioritize differential findings.		

Appendix A: Examination Techniques for the Generalist Sonographer – OBSTETRICS & GYNECOLOGY

*The table below applies to competency **4.2b** and lists the techniques a practitioner should use when examining the structures and characteristics noted. Within this appendix, each technique is assigned an appropriate assessment environment. These are not intended as scanning protocols.*

GYN and/or OB Trimester	STRUCTURE / CHARACTERISTIC	TECHNIQUE							
		real time assessment (transvesical)	measure (2D)	M-mode	colour / power Doppler assessment	Pulsed wave (PW) Doppler assessment	measure PW Doppler	endo-vaginal	sonohysterography / hysterosonography
GYN, 1st, 2nd, 3rd	Adnexa	C						C	
GYN	Bowel	A						A	
GYN, 1st, 2nd, 3rd	Cervix	C						C	
GYN, 1st	Cul-de-sacs	C						C	
GYN, 1st	Endometrium	C	C		A	A	A	C	A
GYN, 1st	Fallopian tubes	C						C	A
GYN	Muscles & ligaments	A						A	
GYN, 1st, 2nd, 3rd	Ovaries	C	C		C	A	A	C	
GYN, 1st, 2nd, 3rd	Urinary bladder	C							
GYN, 1st, 2nd, 3rd	Kidneys	C							
GYN, 1st	Uterus	C	C		A	A		C	A
GYN, 1st	Vagina	C							
GYN	Vasculature of the female pelvis	C			A			C	
Fetal Age / Fetal Growth									
1st	Gestational sac	C	C					C	
1st	Fetal pole	C	C					C	
2nd, 3rd	Abdominal circumference	C	C						
2nd, 3rd	Biparietal diameter	C	C					A	
2nd, 3rd	Femur length	C	C						
2nd, 3rd	Head circumference	C	C						

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GYN and/or OB Trimester	STRUCTURE / CHARACTERISTIC	TECHNIQUE							
		real time assessment (transvesical)	measure (2D)	M-mode	colour / power Doppler assessment	Pulsed wave (PW) Doppler assessment	measure PW Doppler	endo-vaginal	sonohysterography / hysterosonography
Fetal Head									
2nd, 3rd	Anterior horn lateral ventricles	C							
2nd, 3rd	Atria of lateral ventricles	C	C						
2nd, 3rd	Cavum septi pellucidi	C							
2nd, 3rd	Cerebellum	C	C						
2nd, 3rd	Cerebral vessels	A			A	A	A		
2nd, 3rd	Choroid plexus	C							
2nd, 3rd	Cisterna magna	C	C						
2nd, 3rd	Falx cerebri	C							
2nd, 3rd	Skull	C							
2nd, 3rd	Thalamus	C							
2nd, 3rd	Third ventricle	C							
Fetal Spine									
1st	Gross spinal development	C							
2nd, 3rd	Cervical spine	C							
2nd, 3rd	Lumbo-sacral spine	C							
2nd, 3rd	Thoracic spine	C							
Fetal Face									
2nd, 3rd	Facial profile	C							
2nd, 3rd	Palate	A							
2nd, 3rd	Mouth / lips	C							
1st, 2nd, 3rd	Nasal bones	C	A						
2nd, 3rd	Orbits	C	C						
Fetal Neck									
1st	Nuchal translucency	C	A						
2nd, 3rd	Nuchal fold	C	C						
Fetal Chest / Thorax									
2nd, 3rd	Diaphragm	C							
2nd, 3rd	Lungs	C							
2nd, 3rd	Thoracic shape	C							

GYN and/or OB Trimester	STRUCTURE / CHARACTERISTIC	TECHNIQUE							
		real time assessment (transvesical)	measure (2D)	M-mode	colour / power Doppler assessment	Pulsed wave (PW) Doppler assessment	measure PW Doppler	endo-vaginal	sonohysterography / hysterosonography
Fetal Heart									
1st, 2nd, 3rd	Fetal heart rate	C		C				C	
2nd, 3rd	Situs	C							
2nd, 3rd	Size	C							
2nd, 3rd	Axis	C							
2nd, 3rd	4 Chamber fetal heart	C							
2nd, 3rd	Aortic arch	C							
2nd, 3rd	Ductal arch	A							
2nd, 3rd	Outflow tracts	C							
2nd, 3rd	Three vessel view	C							
Fetal Abdomen									
2nd, 3rd	Adrenals	C							
2nd, 3rd	Aorta	C							
2nd, 3rd	Bowel	C							
2nd, 3rd	Gallbladder	C							
2nd, 3rd	Kidneys	C	C						
2nd, 3rd	Liver	C							
2nd, 3rd	Renal pelvis	C	C						
2nd, 3rd	Spleen	C							
1st, 2nd, 3rd	Stomach	C							
Umbilical Cord									
1st, 2nd, 3rd	Umbilical cord	C							
2nd, 3rd	Fetal insertion	C			A				
2nd, 3rd	Placental insertion	C			A				
2nd, 3rd	Vessels	C			A				
Fetal Pelvis									
1st, 2nd, 3rd	Urinary bladder	C							
2nd, 3rd	Genitalia	C							
Fetal Skin									
2nd, 3rd	Contour	C							
2nd, 3rd	Thickness	C	A						

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GYN and/or OB Trimester	STRUCTURE / CHARACTERISTIC	TECHNIQUE							
		real time assessment (transvesical)	measure (2D)	M-mode	colour / power Doppler assessment	Pulsed wave (PW) Doppler assessment	measure PW Doppler	endo-vaginal	sonohysterography / hysterosonography
Fetal Musculoskeleton									
1st	Gross limb development	C							
2nd, 3rd	Feet	C							
2nd, 3rd	Femora	C	C						
2nd, 3rd	Fibula	C	A						
2nd, 3rd	Hands	C							
2nd, 3rd	Humeri	C	A						
2nd, 3rd	Radius	C	A						
2nd, 3rd	Ribs	C							
2nd, 3rd	Tibia	C	A						
2nd, 3rd	Ulna	C	A						
Placenta									
1st, 2nd, 3rd	Placental location / development	C						C	
2nd, 3rd	Grading	C							
2nd, 3rd	Relation to internal os	C			C			A	
2nd, 3rd	Thickness	C	A						
Determination of:									
2nd, 3rd	Amniotic Fluid -Single Pocket Evaluation	C	C						
2nd, 3rd	Amniotic fluid index	C	C						
1st, 2nd, 3rd	Chorionicity	C						C	
2nd, 3rd	Cervical length	C	C					A	
2nd, 3rd	Fetal lie	C							
2nd, 3rd	Fetal presentation	C							
1st, 2nd, 3rd	Number of Fetuses	C						C	
Other									
1st	Yolk sac	C	C					C	
3rd	Cord Doppler	C			C	C	C		
3rd	Amniotic fluid	C	C						
3rd	Breathing	C							
3rd	Fetal movement	C							
3rd	Fetal tone	C							

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Appendix B: Examination Techniques for the Generalist Sonographer – ABDOMEN

*The table below applies to competency **4.2b** and lists the techniques a practitioner should use when examining the structures and characteristics noted. Within this appendix, each technique is assigned an appropriate assessment environment. These are not intended as scanning protocols.*

STRUCTURE / CHARACTERISTIC	TECHNIQUE				
	real time assessment	measure (2D)	colour / power Doppler assessment	pulsed wave (PW) Doppler assessment	measure PW Doppler
Abdominal aorta	C	C	A		
Abdominal wall	C				
Adrenal glands	A				
Celiac trunk	C				
Chest and thorax	A				
Common iliac arteries	C	C	A		
Common iliac veins	A		A		
Inferior vena cava	C		A		
Liver	C	C			
Pancreas	C	A			
Peritoneal, retroperitoneal cavities / spaces	C				
Spleen	C	C			
Splenic vein	C		C		
Superior mesenteric artery	C				
Biliary System					
Gallbladder	C	C			
Common hepatic duct	C	A			
Common bile duct	C	C			
Cystic duct	A				
Intrahepatic ducts	C				
Gastrointestinal Tract					
Appendix	S				
Small bowel	A				
Large bowel	A				
Stomach	A				

STRUCTURE / CHARACTERISTIC	TECHNIQUE				
	real time assessment	measure (2D)	colour / power Doppler assessment	pulsed wave (PW) Doppler assessment	measure PW Doppler
Urinary Tract					
Kidneys	C	C			
Renal arteries	S		S	S	S
Renal veins	S		S	S	S
Ureters	C				
Urinary bladder	C	C			
Prostate	C	C			
Seminal vesicles	C	C			
Liver - Vasculature					
Hepatic veins	C		C	C	
Hepatic artery	C		C	C	
Portal veins	C	C	C	C	

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Appendix C: Examination Techniques for the Generalist Sonographer – SUPERFICIAL STRUCTURES

*The table below applies to competency **4.2b** and lists the techniques a practitioner should use when examining the structures and characteristics noted. Within this appendix, each technique is assigned an appropriate assessment environment. These are not intended as scanning protocols.*

STRUCTURE / CHARACTERISTIC	TECHNIQUE			
	real time assessment	measure (2D)	Colour / power Doppler assessment	pulsed wave (PW) Doppler Assessment
Breast	A			
Inguinal region	A			
Superficial tissues	A			
Scrotum	C	C	C	C
Lymph nodes	C			
Popliteal fossa	C			
Glands				
Salivary glands	A			
Parathyroid	A			
Thyroid	C	C	C	

Appendix D: Examination Techniques for the Generalist Sonographer – PERIPHERAL VEINS

*The table below applies to competency **4.2b** and lists the techniques a practitioner should use when examining the structures and characteristics noted. Within this appendix, each technique is assigned an appropriate assessment environment. These are not intended as scanning protocols.*

STRUCTURE / CHARACTERISTIC	TECHNIQUE		
	real time assessment	colour / power Doppler assessment	pulsed wave (PW) Doppler assessment
Peripheral veins, upper extremity, for DVT			
Jugular vein	S	S	S
Innominate vein	S	S	S
Subclavian vein	S	S	S
Axillary vein	S	S	
Brachial vein	S	S	
Basilic vein	S	S	
Cephalic vein	S	S	
Peripheral veins, lower extremity, for DVT			
Iliac veins	C	C	S
Common femoral vein	C	C	C
Femoral vein	C	C	C
Popliteal vein	C	C	C
Sapheno-Femoral Junction	C	C	C
Sapheno-Popliteal Junction	C	C	
Deep Calf Veins	A	A	

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