Minimum Learning Competencies
Grades 9 and 10

በሁለተኛ □ረጃ □መጻመሪ□□ እርከን (9ኛ እና 10ኛ ክፍሎች) በአማርኛ ቋንቋ ትምህርት

የሚጠበቅ አጥጋቢ የችሎታ ብቃት ደረጃ (MLC)

የብቃት መስክ	*አጥጋቢ የመማር-ማስተማር ብቃት (Minimum Learning Competency)*		*እርማት*
	9ኛ □ክል	*10ኛ □ክል*	
ሰኻስ□· እና ሥነ-ልሣን	• የቋንቋን ምንነትና አገልግሎት በሚመለከት የተወሰኑ አስተያየቶችን መሰንዘር • ከአረፍተነገር አውድ የሚጠብቁና የሚላሉ ድምጾች ያሉባቸውን ቃላት ለይቶ ፍቺያቸውን መፅለ□ • የቃላትን ቅርጽ በቁጥር፣ በመደብና በያ□ ሊያስለዩ የቻሉ ቅጥያዎችን ለይተው እንዳገባባቸው መጠቀም • ለቃላት እማሪያዊና ፍካሬያዊ ፍቺ መስጠት • ለቃላትና ለሀረጋት ከአይነታቸው፣ ከቅርፃቸው ወይም ከአውዳዊ ፍቺያቸው በመነሳት ተመሳሳያቸውን ወይም ተቃራኒያቸውን መስጠት • በተለያዩ ጽሁፎች ውስጥ የሚገኙ መሸፉዛሪ□ ቃላትንና ሀረጋትን ለይተው መጠቀም • ከዓ.ነገር ውስጥ ባለቤት፣ተሳቢ፣ ማሠሪያ አንቀጽን ለይተው ማስረዳት • ከግሥ ግሥን መመስረት • ስርዓተ ነጥቦችን መጠቀም /ድርብ ሰረዝ፣ ነጠብጣብ...../	• የቋንቋን አጀማመርና መሠረታዊ ባሕሪያት በሚመለከት የተወሰኑ አስተያየቶችን መሰንዘር • ማንኛውም ቋንቋ በጽሁፍ □መስ□ር □ለመስ□ር፣ አገልግሎቱ የመስፋትና የመጥበብ እንጂ እንደማይበላለጥ ማስረጽ በመዓ ቀስ መፅለ□ • የምዕላድን ምንነትና ነፃና እስር የመሆን ብያኔን ተከትለው ቃላትን መመሥረት • ቃላትን ከቅርፃቸው፣ ከባህሪያቸውና ከሙያቸው በመነሳት የቃል ክፍላቸውን ለይተው መገልገል • የሀረግ አይነቶችን አመሠራረትና አወቃቀር በምሳሌ ማስረዳትና ስያሜያቸውን መፅለ□: • ተራና ውስብስብ አረፍተነገሮችን ለይተው መዋቅሮች ውስጥ ያሉትን የቃል ክፍሎች ዘርዝሮ ማስረዳት • የመንደርደሪያ አረፍተነገሮች ወይም ኃይለ ቃላት በአንቀጽ ውስጥ ያላቸውን ሚና ለይተው መግለጽ • ስርዓተ ነጥቦችን እንዳገባባቸው መጠቀም /ትዕምርተ ጥቅስ፣ ነጠላ ትዕምርተ ጥቅስ.../	
ማ□ሙሳ	• □ቅታዊነት ባላቸውና ደረጃቸውን በጠበቁ ርዕሰ ጉዳዮች ዙሪያ በሚካሄዱ ማብራሪያዎችና ገለፃዎች ተገቢ ጥያቄዎችን □□ቀረቡና ለሚጠይቋቸውም አግባብነት ያላቸውን መልሶች □□ስ□· መሳተአ • በሚቀርቧቸው ርዕሶች ዙሪያ የሚካሄዱ ጭውውቶችንና ውይይቶችን አዳምጠው ማጠቃለያ መስጠት : • ስለተለ□□ ርክሰ-ጉዳዮች በሚደረጉላቸው አጫጭር ገለፃዎች ውስጥ የሚገኙ የሀቅና የግል አስተያየቶችንና በምክንያትና ውጤት ተዛምዶ የተደራጁ ሀሳቦችን ለይተው መግለጽ	• □ቅታዊነት ባላቸውና ደረጃቸውን በጠበቁ ርዕሰ ጉዳዮች ዙሪያ በሚካሄዱ ጭውውቶች፣ ውይይቶች፣ ክርክሮችና ከሚደረጉላቸው ገለፃዎች አዳምጠው አግባብነት ያላቸውን ጥያቄ ዎች በመጠየቅ ለሚጠየቁትም ምላሽ በመስጠት መሳተፍ • በተለያዩ ርዕሶች ዙሪያ የሚካሄዱ ጭውውቶ ችን፣ ውይይቶችን፣ ክርክሮችንና ገለፃዎችን አዳምጠው ማጠቃለያ መስጠት • በተለ□□ ርክሰ-ጉዳዮች የሚደረጉላቸውን አጫጭር ንግግሮች አዳምጠው በራሳቸው አባባል አሳጥረው ማቅረብ • የተለያዩ ጉዳዮችን በተመለከተ የተደረገ ንግግር አዳምጠው ካገኙት ግንዛቤ የንግግሩን ትክክለኛ መሆን	

የብቃት መስክ	አጥጋቢ የመማር-ማስተማር ብቃት (Minimum Learning Competency)		እርማት
	9ኛ ክፍል	10ኛ ክፍል	
	• ስለተለያዩ ነገሮች አሠራርና አጠቃቀም የሚገል□ ባለብ□ ረጽ (□ስብስብ) መመሪያዎችን አዳምጠው በራሳቸው አባባል ትክክለኛ ቅ□ም ተከተላቸውን በመጠበቅ መግለፅና መተግበር • በቴሌፎን፣ በራዲዮና በቴሌቪዥን የሚተላለፉ መልእክቶችን አዳምጠው ከንግግሩ □ቦችን ግንዛቤና ማስረጃዎችን ዋቢ በማድረግ መግለጽ • በል□ ል□ □ቅታዊ ርዕሰ ጉዳዮች ዙሪያ የሚቀርቡ አጫጭር ምንባቦችን አዳምጠው ዋናና ዝርዝር ሀሳቦችን ከነደጋፊ መረጃዎቻቸው ለጁተ□ መፅለን	አለመሆን መረጃ አስደግፊው መግለጽ • የተለያዩ ውይይቶችን፣ ክርክሮችን፣ ጭውው ቶችንና ንግግሮችን በማዳመጥ ዋና ዋና ሃሳቦችን በማስ□□ሻ መ□□ • ደረጃቸውን በጠበቁ ጭውውቶች፣ ውይይ ቶች፣ □ርክሮችና ገለፃዎች ወቅት አንድን ጉዳይ በሚመለከት የሚቀርቡ አስተያየቶች የሚጠቅሙና የማይጠቅሙ መሆናቸውን በማስረጃ አስደግፈው መለየት	

የብቃት መስክ	አጥጋቢ የመማር-ማስተማር ብቃት (Minimum Learning Competency)		እርማት
	9ኛ ክፍል	10ኛ ክፍል	
መናገር	• ገምቢ ሀሳቦችን፣ አስተያየቶችን፣ መረጃዎችን በማቅረብ፣ ሥርዓት ጠብቀው በመምራት፣ ተገቢነት ያላቸውን ጥያቄዎች በመጠየቅና ለተጠየቁትም ተገቢነት ያላቸውን ማብራሪያዎች በመስጠት በጭውውቶች፣ በውይይቶችና በክርክሮች መሳተፍ • ባለብ□ □ረጽ (□ስብስብ) አቅጣጫዎችንና የተለ ያዩ ነገሮችን አሠራርና አጠቃቀምን የሚገልፀ መመሪያዎችን ትክክለኛ ቅደምተከተላቸውን በመጠበቅ ግልፅ አድርገው ማቅረብ • በተለ□□ ርክሰ-ጉዳዮች ንግግር ሲያደርጉ ለሚያ ስተላልፉት መልዕክት ግልፅ መሆን፣ ጠቃሚነ ትና ተገቢነት ያላቸውን የተለያዩ የድምፅ፣ □እንቅስቃሴና የመልክ ቅይይር . . . ሁኔታዎችን በአግባቡ መጠቀም • በአንድ ርዕሰ-ጉቱጁ ላይ ንግግር ሲያደርጉ፣ ሀሳባቸውን ተጠየቃዊ ቅደምተከተሉን ጠብቀው ማቅረብ • ካደመጡት ንግግር ወይም ካነበቡት ፅሑፍ ያገኙ ትን መልእክት በራሳቸው አባባል መግለጽ • ስለአንድ ጉዳይ የሚያወሳን ነገር አዳምጠወም ሆነ አንብበው መንስኤና ውጤት መግለጽ • የቃል ጥናት ንግግር ማድረፅ	• ገምቢ ሀሳቦችን፣ አስተያየቶችን፣ መረጃዎችን፣ በማቅረብ፣ ሥርዓት ጠብቆ በመምራት፣ ተገቢ ነት ያላቸውን ጥያቄዎች በመጠየቅና ለሚጠየቁትም ተገቢነት ያላቸውን ማብራሪያዎች በማቅረብ፣ በጭውውት፣ በውይይትና በክርክር መሳተፍ • እንደ አድማጫቸውና እንደ ንግግራቸው ይዘት የተለያዩ መረጃዎችን፣ ምሳሌዎችን፣ ገጠመኞ ችን ያካተተና አቀራረቡ ሳቢ የሆነ ንግግር ማድረግ • በማናቸውም ርዕሰ-ጉዳዮች ንግግር ሲያደርጉ ተገቢዎቹን የንግግር ማቅረቢያ ዘዴዎችንና ስልቶችን (ቴክኒኮችን) በአግባቡ መ□ቀም • ቅድመ ዝግጅት በማድረግና ተገቢ ያቀራረብ ስልቶችን በመጠቀም ደረጃቸውን በሚመጥን ርዕሰ ጉዳይ ላይ ያላቸውን አስተያየትና አቋም ማቅረብ • ካደመጡት ንግግር ወይም ካነበቡት ፅሑፍ ያገኙትን መልእክት በራሳቸው አባባል መግለጽ • ስለአንድ ጉዳይ የሚያወሳን ነገር አዳምጠውም ሆነ አንብበው መንስኤና ውጤት መግለፅ። • የጽሑፍ ንግግር ማድረግ	

የብቃት መስክ	አጥጋቢ የመማር-ማስተማር ብቃት (Minimum Learning Competency)		እርማት
	9ኛ ክፍል	10ኛ ክፍል	
ማንበብ	• በአንድ ፅሁፍ ውስጥ በግልፅና በውስጠ ታዋቂነት የሚገኙ መረጃዎችን መሠረት በማድረግ ስለተለያዩ ጉዳዮች የደረሱበትን ድምዳሜና የፈጠሩትን እንድምታ መግለፅ • ስለተለያዩ ውስብስብ ነገሮች አሠራርና አጠቃቀም የሚገልፁ ፅሁፎችን አንብበው የተረዱትን በትክክል መግለጽ • ተለ ቅነ-ቅያችን፣ መመሪያዎች በመረዳት በትክክል ሞልተው ማቅረብ • በንባባቸው ሂደት የአንድን ፅሁፍ ቀጣይ ሀሳቦች መተንበይና ለትንበያቸውም ትክክለኛነት የፅሁፉን መረጃዎች ማቅረብ • አንድን ፅሁፍ አንብበው በውስጡ ያለ በምክንያትና ውጤት ተዛምዶ የተደራጁ ሀሳቦችን በማስረጃ አስደግፈው መለየት • በሚሰጣቸው ርዕሰ ንግግር ለማድረግም ሆነ ፅሁፍ ለማቅረብ የተለያዩ የመረጃ ምንጮችን በቅትመ ፅፀ ታቸው ወቅት በአግባቡና በሥርዓት መጠቀም • በተለያዩ ፅሁፎች ውስጥ የሚያጋጥሟቸውን አዳዲስ ቃላት በአገባባቸው መነሻነት ማራዊና ፍካሬያዊ ፍችያቸውን መስጠት • ያነባበብ ስልትና ፍጥነት እንደሚነበበው ፅሁፍ ዓይነት፣ ይዘት፣ እንደአንባቢው ዓላማና አቀራረብ የሚወሰን መሆኑን በተግባር ማሳየት • በተገቢው የአፃፃፍ ቅርፅ፣ የሀሳብ አደረጃጀትና ዓላማ መሠረት የተለያዩ የሥራ ደብዳቤዎችን መነሳ • በተገቢዎቹ መሸጋገሪያ ቃላትና ሐረጋት ተገልግለ ውና የአንቀፅን አፃፃፍ መርህ ተከትለው በተራኪ፣ በአስረጂ ስልቶች አንቀን መነሳ • በተገቢዎቹ መሸጋገሪያ ቃላትና ሐረጋት ተቆልፅለ መፅቢ፣ ሐተታና መደምደሚያ ያላቸውን ተራኪና አስረጂ ድርሰት መፃፍ	• አንድን ፅሁፍ አንብበው የተለያዩ ጉዳዮችን በተመለከተ ለደረሱበት ድምዳሜና ላደረባቸው ስሜት መነሻ የሆኑዋቸውን ጽሑፎች፣ ግላዊ ልምዳቸውንና ክ-ቀታቸውን ዋቢ አድርገው ማቅረብ • የሚያነቡትን ፅሁፍ ቀጣይ ሀሳብ (ይዘት) ከማንበባቸው በፊትና በንባባቸው ሂደት ለመተ ንበያቸው መነሻ የሆኑዋቸውን የፅሁፉን መረጃዎች፣ ልምዳቸውንና ክ-ቀታቸውን በማስረጃነት በትክክል ማቅረብ • አንድን ፅሁፍ አንብበው ሀቅና የግል የሆኑ አስተያየቶችን በተገቢ ማስረጃዎች በማስደገፍ ለይተው ማቅረብ • አንድን ፅሁፍ አንብበው መረዳታቸውን በተለያዩ መንገዶች በሚያሳዩዋቸው ተግባራት (ማስ ሻ መያዝ፣ ሀሳቦችን በተለያዩ መልኩ በማደራጀት፣ ተዛ ማብራሪያዎችን በመስጠት፣ በማጠቃለል . ..) ማመልከት • የተፃፉ ፅሁፎችን ካነበቡ በኋላ ለሚቀርቡላቸው ጥያቄዎች ያነ በቡትን ፅሁፍ ይዘት፣ ልምዳቸውንና ክ-ቀታቸውን መሠረት በማድረግ የተብራራ መልስ መስጠት • ደረጃቸውን የጠበቁ የተለያዩ ስብሰባዎችን ቃለ-ቶባ ማዘጋጀት • በተገቢው ያፃፃፍ ቅርፅና የሀሳብ አደረጃ ጀት መሠረት የተለያዩ ንግድ ነክ ደብዳቤ ዎችን መፃፍ • በተዛዎቹ መሸጋገሪያ ቃላትና ሐረጋት ተገልግለውና የአንቀፅን አፃፃፍ መርህ ተከትለው በምክንያትና ውጤት ስልቶች ሥዕላዊ ድርሰትን መፃፍ • በተገቢዎቹ መሸጋገሪያ ቃላትና ሐረጋት ተገልግለው መፅቢ፣ ሐተታና መደምደ ሚያ ያላቸው ስእላዊና አመዛዛኝ ድርሰቶችን መፃፍ • የሀሳቡን አወራረድና ግጥምጥምነት ለመጠበቅ ሲሉ ቃላትን፣ አረፍተ-ነገሮችንና ሀሳቦ ችን በመጨመር፣ በማስ ቶት፣ በማ ር፣ ሥር ተ-ነጥብና የቃላት አጠቃቀማቸውን በማሻሻል፣ በረቂቅ ደረጃ የፃፉትን አርመ ውና ከልሰው ማቅረብ	

የብቃት መስክ	አጥጋቢ የመማር-ማስተማር ብቃት (Minimum Learning Competency)		እርማት
	9ኛ ክፍል	10ኛ ክፍል	
መነሻ	• የአንድን ፅሁፍ መልዕክትን ሳያዛቡ በራስ አባባል ማቅረብ • ባላቸው ዕውቀት ተጠቅመው በረቂቅ ደረጃ የፃፉ ትን ፅሁፍ አርመውና ከልሰው የመጨረሻውን ቅርፅ አስይዘው ማቅረብ • አጫጭር ፅሁፎችን አንብበውና ንግግሮችን አዳም ጠው ፍሬሃሣቡን መፃፍ • በተዝ□ □ማስታወሻ አያያዝ ሥርዓት ተጠቅመው ከተለያዩ ንግግሮችና ፅሁፎች □ሚ□ዙዋቸውን መረጃዎች መያዝ	• የአንድን ፅሁፍ ወይም የአንድን ንግግር ዋና ዋና ሀሳቦችንና አስፈላጊ ዝርዝሮችን የያዘ ማጠቃለያ በራሳቸው አባባል ማቅረብ	
ስነ-□ሁአ	• የግጥምን ስልቶች ከመጠናቸው በመነሳት አጭር፣ መካከለኛና ረጅም በሚል ማመልከት • ግጥም ከዝርው ጽሁፍ የሚለይበትን ዋነኛ ባህርያቱን ለይተው መግለጽ • የቀረቡላቸውን ግጥሞች መልእክት አብራርቶ መናገር • ስነቃል ቅርስ መሆኑን ከመግለጽ በተጨማሪ ልዩ ልዩ ዘውጎች ወይም ቅርጾች (Genre) እንዳሉት መግለጽ • ቀልዶችና የቃል ግጥሞች ለሀሳብ ማስተላለፊያነት እንደሚውሉ መግለፁ፤ ሲቀርቡላቸውም መልእክታቸውን ማስረዳት • የፈሊጣዊና ዘይቤአዊ ንግግሮችን በመለየት መ□ቀም • ፈሊጣዊና ዘይቤአዊ ንግግሮች በቃላዊና ጽሁፋዊ ስነጽሁፍ ውስጥ ያላቸውን ቦታና አጠቃቀም መፅለ	• የግጥም ዓይነትን ለመለየት /ዜማን፣ ምትን፣ሀረግን፣ስንኝን፣ ምጣኔን. . ./ ለይተው መፅለ□ (ምሳሌ፡- ቡሄ በሉ ቤት፣ ስንጎ መገን ቤት፣ የወል ቤት) መፅለ□። • የቀረቡላቸውን ግጥሞች ከይዘትና ከቅርጽ አኳያ ገምግመው በመጠኑ አስተያየት መስጠት • የስነቃልን ቃላዊና ህዝባዊ ባህርይ በማስረዳት ከቅርጾቹ ብዙሥቹን መጥራት፣ የተወሰኑትን በተለይም /የፍቅርና የሥራ ቃላዊ ግጥሞችን እንዲሁም የምሳሌያዊ አነጋገሮችን/ አገልግሎታቸውንና መልእክቶቻቸውን ተረድተው መ□ቀም • በአማርኛ እና በሚያውቋቸው ሌሎች ቋንቋ ሥች የሚያዳምጧቸውንም ሆነ ጠይቀው የሰበሰቧቸውን ቃላዊ ግጥሞች መቼና በምን ሁኔታ እንደሚከወኑ መፅለ□	

የብቃት መስክ	አጥጋቢ የመማር-ማስተማር ብቃት (Minimum Learning Competency)		እርማት
	9ኛ ክፍል	10ኛ ክፍል	
	• በአነጣጣሪ፣ ተለዋጭና ሰውኛ ዘይቤዎች የቀረቡ ንግግሮችን ወይም ግጥሞችን ለይቶ ማስረዳት • ስነጽሁፍ ወይም የፈጠራ ጥበብ፡- ስነቃል፣ ፅዓም፣ ልቦለት እና ድራማ የተባሉ ዘርፎች እንዳሉት መግለጽ • የልቦለድ ጽሁፍ አጭርና ረጅም ተብሎ በሁለት እንደሚከፈል፣ የልዩነቱ መሠረትም በልቦለድ አላባውያኑና ቴክኒኮች (Elements and Techniques) አጠቃቀም የተነሣ እንደ ሆነም በተወሰነ ደረጃ መግለጽ • የልቦለድ አላባውያንን በተለይም ገፀባህርይና ታሪክን በተመለከተ ስለምንነታቸው መናገር • ስለልቦለድ ቴክኒኮች በተለይም ስለአጭር ልቦለድ የተወሰኑ አስተያየቶችን መስጠት • የቅኔን ምንነት በመገንዘብ ህብረቃልን አውጥቶ ሰምና ወርቅን መግለጽ	• ዘይቤዎችና ፈሊጦችን ከተነገሩበት ሁኔታ፣ ጊዜና ሥፍራ ጋር በማያያዝና የቋንቋውን ተናጋሪዎች አጠቃቀም ልማድ በመገንዘብ መልእክታቸውን ማስረዳት • በእንቶኔ፣ በምፀትና በግነት ዘይቤ ስልት የሚቀርቡ ንግግሮችንና ግጥሞችን መልእክት ለይተው ማብራራት • ልቦለድን ከአላባውያኑና (Elements of writing) ከቴክኒኮቹ አኳያ ጠቅለል ባለ መልኩ፣ በተለይም መቼትና ጭብጥን አስመልክቶ በዝርዝር ማስረዳት • የረጅም ልቦለድን ባህሪያት በመገንዘብ ከሚ ያነቧቸው ልቦለድ ጽሁፎች ለምሳሌነት የሚያግዙ ነጥቦችን ነቅሶ ማውጣት • በአማርኛ እንደሁኔታው በሌሎችም በሚያ ውቋቸው የኢትዮጵያ ቋንቋዎች ስነጽሁፍ ታሪክ በልቦለድ ደራሲነት □ሚ□ቀሱ ሰዎችና ሥራዎቻቸውን አስመልክቶ ፋና ወጊ የሆኑትን መግለጽ • የቅኔን ሰምና ወርቅ ፍቺ መስጠት	

Biology Grades 9 and 10 Minimum Learning Competencies

Area of Competency	*Grade 9*	*Grade 10*
Biology and Technology	• Name some Ethiopian biologists with internationally recognized contributions and explain their works • Mention some institutions in Ethiopia that are involved in biological research and explain their activities	• Define biotechnology and discuss the significance of biology • Discuss the processes where biotechnology has been in use since ancient times • Identify and discuss the important areas of biotechnological application at present time
Cell Biology	• Define microorganisms and explain their useful and harmful effects of some microorganisms • Describe the importance of vaccines and how they are produced • Describe microbiological techniques used to control, grow, and staining of microorganisms • Explain the distribution, impacts and prevention of HIV and AIDS in Ethiopia • Demonstrate methods of giving care and protection for PLWHA • Describe the structures and functions of the lymphatic system and explain how HIV affects it • Explain the importance of VCT services and express willingness to voluntarily participate in this service • Show willingness to conform to responsible sexual behavior • Demonstrate life skills that help them to prevent HIV • List the types of microscopes, state their functions and explain the techniques of using microscopes • Distinguish between magnification and resolution of a microscope • Use the microscope to study cells and explain the purpose of staining specimens • List the structures of cells and describe their functions and compare animal and plant cells • Describe the permeability of the cell membrane and the processes of diffusion and osmosis • Show that plant cells become flaccid when they lose water and become turgid when they absorb water	• Define heredity and compare mitosis and meiosis using sketch diagram • Describe the works of Gregor Mendel on garden peas and relate his experiment to the principle of inheritance • Demonstrate the principle of inheritance using beads • Define chromosome, DNA and genes • Describe the structure of chromosome and list the components of DNA • Describe the methods, importance and examples of breeding farm animals and crops

Area of Competency	*Grade 9*	*Grade 10*
	• Explain plasmolysis and turgor pressure • Explain passive and active transport across cell membranes	
Human Biology and Health	• Define the terms food and nutrition, list the six classes of food and tell their sources, functions and deficiency diseases • List vitamins and tell their sources, functions and deficiency diseases • Conduct simple food tests for starch, protein and fats • Explain the importance of balanced diet • Compare their body height and weight with the standards given in a table of height/weight ratios and suggest what they should do to match the standards • Analyze the traditional eating habits of their locality and suggest improvements • Label the diagram of the structures of the human • digestive system and describe the functions of each structure • Define enzymes and describe their role in the process of digestion • Describe the processes of digestion in the mouth, stomach and small intestine • Prove that starch digestion begins in the mouth by conducting a simple experiment using saliva and bread • Describe the process of absorption of digested food • Discuss constipation , care with canned, bottled and packed foods, and food hygiene as issues of digestive health • Identify the human breathing structures on a diagram or model and describe their functions • Examine the structures of the lung using lung specimen of sheep or cow • Explain the mechanism of breathing and gas exchange using a lung model • Demonstrate the presence of CO_2, water vapor and heat in exhaled air	• Mention the two parts of the nervous system and explain the structures and functions of the human nervous system • List the three types of neurons , indicate their structures and tell their functions • Describe nerve impulse and synapse • Describe an action potential and the passage of nerve impulse along a neuron with examples • Describe a synapse and how an action potential crosses it • Describe neurotransmitters with examples • Explain how the brain is protected and compare the fore, mid, and hind brain • Describe the reflex arc, mention the structures involved and compare simple and conditioned reflexes • Demonstrate at least two examples of reflex actions such as knee jerk and eye blinking • Indicate the structures of the human eye, ear, skin, tongue and nose using diagrams or models and describe their functions and methods of caring for them • Dissect sheep or cow eye and identify the structures • Demonstrate the blind spot • Apply sugar, salt, vinegar and rhamnus to the tongue and investigate where each of the four flavors are detected on the tongue • Define substance abuse, explain its effects, its status in Ethiopia, and the possible preventive measures • Compare exocrine and endocrine glands • Describe the structures and functions of thyroid, parathyroid, adrenal, pancreas, gonads, and pituitary glands, list their hormones and the functions of each hormone • Describe goiter and diabetes mellitus, their causes and treatment • Explain the menstrual cycle and the associated changes • List and explain the different birth control methods • Describe female genital mutilation as a harmful traditional

Area of Competency	***Grade 9***	***Grade 10***
	• Compare the composition of inhaled and exhaled air, list the factors that affect breathing and explain how they affect it • Explain the effects of cigarette smoking, inhaling gaya, suret and shisha on health and on the economy of the family • List the methods maintaining the hygiene of breathing • Describe the steps followed during artificial respiration and demonstrate these steps • Explain cellular respiration and describe the formation of ATP and its importance to the body • Compare aerobic and anaerobic respiration • Explain the importance of blood, list its composition and tell the functions of each component • List the three types of blood vessels and explain their functions • Indicate the structures of the heart on a diagram/model and explain their functions • Examine a mammalian heart using fresh or preserved specimens from cows or sheep • Count their own heart beat using their fingers • Diagram the process of circulation • Name the four blood groups and indicate their compatibility • Discuss anemia and hypertension as important problems of the circulatory system and the cares that should be taken to control them • Define the terms HIV and AIDS and explain hoe HIV is transmitted through blood and how this could be prevented • Identify WBC as cells that HIV attacks primarily • Demonstrate assertiveness, decision making and problem solving skills as life skills that help to prevent HIV and AIDS	practice • Practice life skills that help them to prevent HIV and AIDS • Define homeostasis and explain how it allows an organism to survive in a wide range of environmental conditions • Define the terms poikilotherm and homeotherm and compare them • Explain the physiological and behavioral methods of temperature regulation in homeotherms • Identify the structures of the human kidney, tell their functions, and describe the contribution of the skin in maintaining salt and water balance • Describe the regulatory functions of the liver

Area of Competency	*Grade 9*	*Grade 10*
Plants	• List the characteristic features of kingdoms monera, protista, and fungi and give examples for each • Explain the common characteristics of the plant kingdom • Name the six divisions of plants, describe the common characteristics of each division and name representative plants in each division	• Identify the internal structures of leaves and their functions • Explain the importance of CO_2, water, light and chlorophyll for photosynthesis • Explain how plants convert CO_2 and water into carbohydrate by describing the light and dark reactions • List the various food storage organs in plants with examples • Explain the significance of photosynthesis • Demonstrate the importance of CO_2, light and chlorophyll for photosynthesis using simple experiments • Explain the significance of photosynthesis in agriculture • Explain the mechanism of water transport in plants and name the structure involved in the process • Describe transpiration, the factors affecting it, and its implications for agriculture • Demonstrate water transport in plants using simple experiment • Describe the mechanisms of uptake of mineral salts through roots and movement of organic materials in the phloem • Demonstrate the processes of germination in dicots and monocots • List plant hormones, state their functions and outline the mechanism of action of auxins • Explain how removal of apical dominance and sunlight influence plant growth • Name the different types of tropisms and explain their processes
Animals	• Define taxonomy and explain the need for classification • Tell the history of taxonomy by mentioning the works of Aristotle and Linnaeus • Define species and give examples of species • Describe the system of binomial nomenclature, give examples of scientific names of organisms and write these names correctly by following the rules of writing scientific names	

Area of Competency	*Grade 9*	*Grade 10*
	• Write the hierarchy of classification groups in a descending order with examples from plants and animals • Name the five kingdoms in the modern system of classification • Define diversity and indicate diversity of animals with examples • List common characteristics of kingdom animalia and identify the distinguishing characteristics of each phylum • Describe phylum helminthes, annelids, mollusks and arthropods with examples • Describe the characteristics of vertebrates and distinguish among its classes	
Environment	• Explain the physical (abiotic) and biological (biotic) components of an ecosystem • Describe and illustrate carbon and nitrogen cycles • Explain food chain, food web, pyramids of biomass and energy using diagrams • Describe plant and animal adaptations with examples • Describe the methods of estimating populations and the factors that limit their growth • Explain the effects of unchecked human population growth on food and environment and the methods of controlling it • Explain the importance of growing trees and participate in a growing project	• Define the term natural resource, list and categorize them as renewable and non-renewable • Define biodiversity and explain its aesthetic, economic and ecological significance • List at least four uses of vegetation to man and discuss the effects of human activity on natural vegetation • Discuss how Ethiopian vegetation was affected in history • Name some of the endemic species of plants in Ethiopia • Define conservation, discuss different methods of conserving vegetation with special attention to endemic species • List the uses of wildlife, the effects of human on them and their status in Ethiopia • List at least five endemic animals in Ethiopia • Describe the conservation of wildlife and the uses of national parks of Ethiopia • List at least five national parks of Ethiopia • Describe the causes and effects of air pollution • Discuss the consequences of global warming (greenhouse effect) and ozone depletion

Minimum Learning Competencies (MLCs) of Chemistry for Grade 9 and 10

Area of competencies	*Grade*	
	9th	*10th*
I. Substances	• Describe Dalton's and Modern Atomic theory • Compare and contrast Dalton's and Modern Atomic theory • Write the charges and the masses of the three fundamental subatomic particles • Explain the terms- atomic number, mass number, atomic mass and isotopes • Determine the number of protons, number of electrons, and number of neutrons from atomic number and mass number • Name the five atomic models and state Bohr's postulates • Explain Energy levels, Valence electrons, and electron configuration • Write the ground state electron configuration for given elements and represent them diagrammatically • Define chemical bonding and explain why atoms form chemical bonds with other atoms • Define ionic bond, describe its formation and explain the general properties of ionic compounds • Define covalent bond, describe its formation and explain the general properties of covalent compounds • Make models of molecules to show single, double and triple bonds using balls and sticks of locally available materials • Give examples of simple ionic and covalent compounds and draw their electron dot structures • Explain polarity of covalent molecules and distinguish between polar and non polar molecules • Explain coordinate covalent (dative) bond formation using examples • Define metallic bonding and describe thermal and electrical conductivity of metal in relation to metallic bond	

Area of competencies	*Grade*	
	9th	*10th*
	• Define intermolecular forces, explain dipole-dipole and dispersion forces and illustrate using examples • Explain the effects of hydrogen bond and dispersion forces on the properties of substances • Name and give examples for the three physical states of matter • State kinetic theory of matter , explain and compare the properties of the three physical states of matter in terms of kinetic theory • State and explain Boyle's law, Charles' law, combined gas law, Avogadro's law and Graham's law of diffusion and do calculations to which the laws apply • Perform activities to show the changes in temperature, pressure and volume of gases to illustrate Boyle's and Charles' laws • Explain the terms evaporation, condensation, vapor pressure, boiling point, heat of vaporization and heat of condensation • Explain the terms- melting, fusion, sublimation, melting point, freezing point, heat of fusion and heat of solidification • Carry out activities to demonstrate the concepts of vapor pressure and to determine the boiling points of water and ethanol • Describe phase changes and explain temperature changes associated to phase changes • Demonstrate an experiment to show phase changes using ice, liquid water and water vapor • Demonstrate Scientific inquiry skills:- observing, predicting, classifying, comparing and contrasting, making model, communicating, measuring, asking questions, interpreting data, drawing conclusions, applying concepts, relating causes and effects and making generalizations	

Area of competencies	*Grade*	
	9th	*10th*
II. Chemical Reactions	• Define Chemical reaction and give examples • State the laws of definite proportion and the law of conservation of mass and illustrate with examples • Demonstrate the law of conservation of mass using simple experiment • Balance chemical equations using the inspection and the Least Common Multiple (LCM) methods • Discuss energy changes in chemical reactions, distinguish between exothermic and endothermic reaction and illustrate using diagram • Appreciate the importance of chemical changes in the production of new substances and energy' • Identify four types of chemical reactions and give examples • Deduce mole ratios from balanced chemical equations • Solve mass-mass problems based on the given chemical equations • State Avogadro's principle, solve Volume-Volume and mass-volume problems based on balanced chemical equations • Determine excess and deficient (limiting substances) in a reaction. • Describe the percentage, actual and theoretical yields of a chemical reaction • Calculate the percentage yield of a reaction from the given information • Define redox reaction, the terms oxidation and reduction in terms of electron transfer and give examples • Define oxidation number and determine the oxidation number of an element in a given formula(in a molecular, an ion or a compound) • Describe oxidizing and reducing agents and distinguish between them • Analyze a given redox reaction by specifying the substance reduced, the substance oxidized, the oxidizing agent and the reducing agent	• Explain what an Electro chemistry is • Define electrical conductivity and differentiate electrolytic conductivity from metallic conductivity • Define terms like Electrolysis, Electrode, Cathode, anode, Anion, Cation, Electrolyte, non-electrolyte, strong electrolyte and weak electrolyte, half reaction and cell reaction • Confirm by performing simple experiments on metallic and electrolytic conductivity • Describe electro chemical cell • Draw labeled diagram of electrolytic cell and represent electrode reactions by ionic half-reactions for fused electrolytes • Perform an activity to show electrolysis of molten electrolytes • Explain voltaic cell • Explain the difference between voltaic cell and electrolytic cell • Describe the difference types of voltaic cell • Describe how voltaic cells can be used to make commercially useful batteries • Describe selected industrial applications of electrolysis

Area of competencies	*Grade*	
	9th	*10th*
	• Distinguish between redox and non-redox reaction • Explain the reaction rate and describe an activity to illustrate it • Describe how collision, activation energy and proper orientation a chemical reaction to occur • List and explain the factors that affect reaction rate and describe briefly an activity to illustrate each • Define reversible reaction, irreversible reactions and chemical equilibrium • Describe the characteristics of chemical equilibrium • Write an expression of equilibrium constant of a reversible reaction • State the Lechatlier's principle and explain factors affecting chemical equilibrium • Demonstrate scientific enquiry skills:- observing, inferring, predicting, classifying, comparing and contrasting, communicating, measuring, asking • questions, designing skills, interpreting data, drawing conclusions, applying concepts, relating causes and effects and problem solving	
III. Classification In Chemistry	• Describe Periodicity • State the modern periodic law • Define the terms Period and Group • Explain the relation ship between the electronic configuration structure of the modern periodic table • Identify and explain the three classes and the four blocks of the elements of the periodic table • Tell the number of the main groups and sub groups and give specific names for the main group elements • Tell the number of periods and classify them as short, long and incomplete based on the number of elements they contain • Predict from the given atomic number of an element its position in the periodic table • Deduce the properties of an element from its position in	• Classify inorganic compounds in to oxides, acids, bases and salts • Define oxides and classify them in to acidic oxides, basic oxides, neutral oxides, Amphoteric oxides and peroxides • Define acidic oxides, give examples and explain their properties and methods of preparation • Define Amphoteric oxides, give examples and explain their properties • Define neutral oxides, give examples and explain their properties. • Define acids and bases in terms of Arrhenius, Bronsted-Lowry and Lewis and give examples.

Area of competencies	*Grade*	
	9th	*10th*
	the periodic table. • Explain the general trends in properties of elements down a group and across a period of the periodic table • Make a model to demonstrate the trends in properties of elements in the periodic table • Appreciate the importance of the classification in the study of chemistry • Demonstrate the scientific enquiry skills:- observing, inferring, predicting, classifying, comparing and contrasting, making models, communicating, measuring, asking questions, interpreting illustrations, drawing conclusions, applying concepts and problem solving.	• Classify acids and bases on the number of ionizable (replaceable) hydrogen ion (H^+) and based on the number of elements they are composed of. • Explain the general properties of acids and bases • Distinguish between Strong and weak acids; concentrated and diluted acids • Distinguish between Strong and weak bases; concentrated and diluted bases • Use the necessary precautions while working with acids and bases • Define PH and POH, describe the PH scale and identify a given PH labeled solution as acidic, basic or neutral • Show the mathematical relationship between PH and POH • Calculate the PH, POH, H^+ ion concentration, OH^- ion concentration of a solution when the necessary variables are given. • Perform an activity to determine the PH of some common substances using universal indicator or PH meter • Explain methods of preparing acids and bases and describe the uses of the three common laboratory acids and the three common laboratory bases • Conduct simple experiment to prepare acids and bases in the laboratory • Define salts and give examples • Classify salts as acidic, basic, and normal salts • Explain properties of salts • Explain methods of preparing salts • List some important salts and explain their uses • Describe the chemical tests for some salts (Sulfates, chlorides, nitrates, and carbonates)

Area of competencies	*Grade*	
	9th	*10th*
		• List essential nutrients elements • Describe the functions of nitrogen, phosphorus and potassium • Define fertilizers and describe their importance • List some common inorganic compounds that are used as pesticides
IV. Organic Chemistry		• Narrate the historical development of organic chemistry • Classify organic compounds • Define the term functional group • Define homologous series and state its characteristics • Define the terms hydrocarbons, structural formula, condensed structural formula and cis-trans isomerism • Write the general formulas for alkanes, alkenes and alkynes • Write the molecular formula, condensed structural formula and names of the first ten members of alkanes, alkenes and alkynes • Give the IUPAC names for branched alkanes, branched alkenes, branched alkynes, cyclo alkanes and cyclo alkenes • Write the possible structural isomers of the alkanes- C_4H_{10}, C_5H_{12} and the alkenes- C_4H_8 and C_5H_{10} • Write cis-trans isomers for the given alkenes • Explain the physical and chemical properties of alkanes, alkenes alkynes homologous series • Explain why alkenes and alkynes undergo addition reaction but not substitution reaction • Describe the laboratory and industrial preparation of methane, ethane and ethyne • Prepare methane, ethane ethyne in a laboratory • Performa a project on the production of biogas from cow dung

Area of competencies	***Grade***	
	9th	***10th***
		• Define aromatic hydrocarbons • Draw and explain the structure of benzene • Describe the main physical properties and chemical reactions of benzene • Carry out test tube reactions of benzene with a) $KMnO_4$ b) Br_2/CCl_4 c) Conc. H_2SO_4 • List the natural sources of hydrocarbons and tell their formation • Explain the fractional distillation of petroleum, discuss fractionally distilled petroleum products and their uses • Tell the composition of coal • Explain destructive distillation of coal • Classify alcohols based on the number of hydroxyl (OH^-) groups • Classify monohydric alcohols in to primary, secondary and tertiary alcohols, write the general formula of monohydric alcohols and give some examples form each of them • Write the molecular formulas and names of the first six members of monohydric alcohols • Give the IUPAC names for given alcohols • Describe the physical properties of alcohols • Explain the industrial and laboratory preparation of ethanol • Explain the general methods of preparation of alcohols • Performa an activity of preparing locally distilled alcohol (Katikalla) • Explain the chemical reactions of alcohols such as oxidation, reaction with active metals, esterification and dehydration • Write the general structural formulas of aldehydes, Ketones, carboxylic acids and esters and give the

Area of competencies	*Grade*	
	9th	*10th*
		structures and names of common members each group • Discuss the uses of organic compounds in the manufacture of industrial products like beverages, pharmaceuticals, fuels, soaps and detergents and dry cleaning agents • Discuss the uses of organic compounds in the manufacture of agricultural products like pesticides, herbicides and urea • Conduct an experiment to prepare soap from naturally existing ester(fats or oils)
V. Chemistry and Industry		• Define and classify natural resources • Explain the importance of natural resources in the manufacturing of industrial products • Describe the chemical properties and extraction methods of aluminum, iron and copper • Describe the chemical properties and industrial production of nitrogen, phosphorus, sulfur and chlorine • Mention the important steps in the production of glass, ceramics, Cement, Sugar, Paper and pulp and tanneries • Describe different methods of food processing and preservation • Explain how different industrial by products pollute air, water and land.

Minimum Learning Competencies in English Language Skills Grades 9 and 10

Competencies Grade 9	*Competencies Grade 10*
Listening *Students should be able to:* Listen to a variety of text types (such as instructions, dialogues, stories, descriptions, lectures, songs, questions in an interview) and a variety of speakers and be able to: • predict the content using a variety of contextual clues (such as the first line, the situation) • identify gist • identify main ideas • identify key content words • identify specific information • follow the structure and logic of a text through identifying discourse markers such as sequencing words • relate what they have heard to their own lives • retell simply what they have heard Task types should include taking notes, filling in tables, charts, maps and gaps in sentences, ticking items, answering questions (open and true/false), ordering/ranking information ordering/matching pictures, exchanging information, matching definitions, speaking exercises. If possible texts should include the use of both native and non-native speakers	**Listening** *Students should be able to:* Listen to a variety of text types (such instructions, dialogues, lectures, stories, descriptions, advertisements, news broadcasts) and a variety of speakers and be able to: • predict the content using a variety of contextual clues (such as the first line, the situation) • identify gist • identify main ideas • identify key content words • identify specific information • identify detailed information • follow the structure, logic and sequence of a text through identifying discourse markers (including sequencing words and cohesive devices) and tenses • relate what they have heard to their own lives • retell what they have heard in some detail Task types should include taking notes, filling in tables, charts or gaps in sentences, ticking items, answering questions (open and true/false), ordering/matching pictures/sentences, sequencing events, speaking and writing exercises. If possible texts should include the use of both native and non-native speakers Grade 10 listening texts should be longer, on more challenging topics and with more difficult tasks compared to grade 9 There should also be more authentic/semi-authentic texts (e.g. radio/TV recorded or scripted) so that students begin to deal with 'real' English.

Competencies Grade 9	***Competencies Grade 10***
Speaking *Students should be able to:* • use previous knowledge to pronounce new words and structures • use a range of structures to: - ask for information - give reasons for actions/viewpoints - address misconceptions - give an alternative perspective - ask for repetition and clarification - express sympathy - express surprise • express their opinion and support this using basic language • agree, disagree and express simple counter arguments • describe the location of places and give simple directions • give instructions using a range of structures and sequencing devices • express cause and effect • recount stories using two past tenses • talk about possible and planned futures • express future actions decided at the moment of speaking • talk about an imaginary situation • talk about themselves, others and their daily lives • ask and respond accurately to a basic range of open and closed questions (including follow on questions) • describe pictures, people, places, animals, objects, etc. using appropriate language • compare pictures, people, places, animals, objects, etc. using appropriate language • contribute to and develop (at a basic level) conversations around the unit topic in pair, group, plenary activities using language that is comprehensible (if inaccurate, limited or hesitant) and which communicates the intended message)	**Speaking** *Students should be able to:* • use previous knowledge to pronounce new words and structures • use a range of structures to: - identify problems - think ahead - clarify and correct oneself - generalise and make exceptions - show uncertainty - apologise - restate - add information - guess - make plans and suggestions - remember and reminisce • ask for opinions, express their own opinion and support it (including through illustrating a point) • agree, disagree and express simple counter arguments • express cause and effect • recount stories and experiences in the past using a range of structures • talk about the future using a range of structures • explain how to operate a piece of equipment • talk about themselves, others and their daily lives • ask and respond accurately to a basic range of open, closed and follow-on questions (including in an interview) • report what they have heard • describe/compare pictures, people, graphs, objects etc. using appropriate language • contribute to and develop conversations around the unit topic • research and give a short presentation on a chosen topic in pair, group or plenary activities using language that is comprehensible (if inaccurate, limited or hesitant) and which communicates the intended message)

Competencies Grade 9	***Competencies Grade 10***
Reading *Students should be able to:* Read a variety of text types (instructions, labels, magazine articles, leaflets, stories, descriptions, directions, newspaper articles, letters etc.) on familiar topics including some authentic materials and be able to: • predict the content of a text from pre-reading activities • infer meanings of new words using contextual clues • scan to obtain specific information • skim to get the general idea • express their views • retell in outline (mainly stories) • make basic notes of main points • relate what they have read to their own experience • distinguish between fact and opinion • follow instructions and directions Task types should include transferring information to tables, charts or maps, ticking items, answering questions (open and true/false), ordering/ranking information, ordering / matching pictures/headings/definitions, physical response, writing/speaking exercises etc.	**Reading** *Students should be able to:* Read a variety of text types, (factual articles, instructions, labels, warnings, stories, descriptions, advertisements, poems, newspaper articles, letters etc.) on familiar and unfamiliar topics including some authentic materials and be able to: • predict the content of a text from pre-reading activities • infer meanings of new words using contextual clues and/or knowledge of word formation • scan to obtain specific information • skim to get the general idea • identify the main arguments and give their own opinions • express their view (including in writing) and give reasons • retell it in chronological order (mainly stories) • make notes of the main/specific points • relate what they have read to their own experience • distinguish between fact and opinion • follow instructions and directions • interpret statistical data Task types should include transferring information to tables, charts or maps, ticking items, answering questions (open and true/false), ordering / ranking information, ordering/matching pictures, physical response, writing/speaking exercises etc. Grade 10 reading texts will be on different topics from grade 9. On top of this texts should be longer and tasks more challenging. There should be more use of authentic texts.
Writing Students should be able to: • write complex and compound sentences • use basic cohesive devices to structure a paragraph • structure a paragraph using a topic sentence and supporting ideas • write a short simple introduction to an essay • write a short simple conclusion to an essay	**Writing** Students should be able to: • identify and follow the seven stages of writing: think, brainstorm, plan, draft, check, rewrite, proof read • use known spelling strategies to spell familiar and new words • write guided or supported essays in 5 paragraphs including an introduction and conclusion (building on work done in grade 9)

Competencies Grade 9	***Competencies Grade 10***
• punctuate sentences correctly • make notes from 2 to 3 paragraphs • write a guided essay in 3-4 paragraphs using a writing scaffold for support • write a short informal letter • write 1-2 paragraph narrative and descriptive passages using language that is comprehensible (if inaccurate or repetitive) and which communicates the intended message	• write a short report based on available data • in small groups, write and present a report of 350 to 400 words including suggestions/recommendations • write a piece of publicity or design a brochure/poster individually or in a group • make notes from a printed source • put notes into sentences and order sentences into logical paragraphs • write a short informal letter (including a reply) • write a short formal letter • write instructions/warnings and support them with a pictures • write 2-3 paragraphs to narrate, describe or persuade (building on work from grade 9) using language that is comprehensible (if inaccurate or repetitive) and which communicates the intended message
Language items Past simple and past continuous Present perfect simple and continuous (including with 'for' and 'since') Relatives 'will' for spontaneous decisions Verb patterns (verbs that take gerund and verbs that take the infinitive) Adverbs (of manner, place and frequency) Articles Zero, first and second conditional Embedded questions	**Language items** Past simple, past continuous and past perfect Present perfect simple and continuous (with for, since, still, yet and already) I wish + past simple Verb patterns (verbs that take the gerund, verbs that take the infinitive, verbs that need an object then infinitive) Adverbs (of manner, place, frequency and degree) Articles So and such Advanced questions forms (e.g. who as subject and object, questions and prepositions) Direct and indirect objects
Vocabulary Perform with and understand a total number of 1250 words in different contexts such as tourism, hobbies and crafts, food and health, HIV and AIDS, media, cities and towns, money, culture, endangered animals, discrimination etc. Students make a note of useful vocabulary for themselves related to their subjects and their interests.	**Vocabulary** Perform with and understand a total number of 1500 words in different contexts such as sport and fitness, health, fiction, moral education and personal responsibility, advertising, drugs, natural disasters, education, energy etc. Students make a note of useful vocabulary for themselves related to their subjects and their interests.

Minimum Learning competencies for Secondary Education First Cycle (9&10) Geography

Theme	***Competencies***	
	Grade 9	***Grade 10***
I. The concept of Geography	• Value the concept of Geography • Write the meaning of Geography • Argue that geography is a science • Determine the scope of geography and classify its branches	
II. Map Reading	• Explain the meaning of map • Compare the historical development of map between the earlier and the present time maps • Recognize the basic uses of maps and calculate field distance and areas of irregular shapes • Demonstrate classifying map on purpose and scale • Use marginal information to interpret maps • Construct and interpret statistical diagrams based on simple line graph,simple bar graph and pie chart.	• Indicate the location of places in relation to the True North on maps • Measure and calculate the directions and bearings on maps • Determine position on maps using Geographical and National Grids • Construct maps by enlarging and reducing techniques using square papers • Compare the traditional methods with contour methods to represent relief on maps • Apply methods of contouring to show different altitudes on maps based on basic properties of contours • Analyze different types of slopes by using gradient measurement
III. Physical Environment	• Analyze the internal and external forces that change the surface of the earth and relate with the resulting landforms • Realize the origin, composition and the layers of the earths atmosphere • Relate the association between the elements and controls of climate • Develop the skill of measuring, recording and constructing temperature and rainfall graphs. • Know the physical and human characteristics of places, and use this knowledge to define and study regions and their patterns of change.	• Evaluate the geological formation of the earth • Interpret the components of the physical environment of the earth • Select the appropriate means of classifying climate • Relate causes and consequences of climatic change • Discuss distribution of major elements and controls of climate of Ethiopia • Appreciate the spatio-temporal variation of climate in Ethiopia • Exemplify drought as one of the consequences of climatic change in Ethiopia.

Theme	***Competencies***	
	Grade 9	***Grade 10***
	• Examine the factors that affect the distribution and characteristics of ecosystem.	• Appreciate the diversity and productivity of ecosystem as a bases of economy.
IV. Human and economic aspects	• Describe the demographic concept of population and the concept of economic activities. • Compare and contrast sources of population data • State reasons for variation in population distribution and settlement • Analyze the effects of economic activities in modifying and transforming resources. • Realize the importance of natural resources for sustainable economic development • Describe how changes in transport technology and communication affect the location and patterns of economic activities. • Discuss land use patterns of Ethiopia	• Evaluate trends and effects of world population numbers and patterns • Compute data of population variables to use for simple projection • Analyze the physical and cultural impact of human migration • Realize the causes and types of human migration and its effect on places • Construct and analyze population pyramids/structure to explain their connection with aspects of development. • Examine how the changing distribution of resources and socio cultural factors affect the pattern of population distribution. • Appreciate the size and function of urban areas • Compare and contrast the differing characteristics of settlement in developing and developed countries.
V. Public and policy related issues	• Analyze how HIV/AIDS affects the socio-economic development of a country. • Identify and evaluate alternative practices to respond to constraints found in varied environments • Reflect the importance of environmental policy of Ethiopia for wise utilization of resources.	• Describe the characteristics of economic systems • Discuss the concept of sustainable economic development and its indicators • Analyze the contribution of world economic organizations in connecting countries of the world.

Minimum Learning Competencies for Grades 9 History

Area of competency	*Grade 9*
Early human beings, the neolithic revolution and the emergency of state	• Realize the differences between pre-history and history. • Explain the importance of the study of history. • Evaluate the sources of history. • Demonstrate the use of dating in history. • Analyze the different views on the origin of human beings with particular emphasis to evolution. • Identify the three stages of Stone Age. • Explain the major achievements of the Neolithic revolution. • Explain how agriculture contributes for the formation of early states.
Ancient world civilizations	• Appreciate the achievements of the major ancient world civilizations.
Peoples and states in Ethiopia and the horn up to 1855	• List the pre-Axumite states in Ethiopia and the horn. • Appreciate the achievements of the Axumite Civilization. • Explain the contributions of the introduction of Christianity to the achievements of Axum. • Examine the factors for the decline and fall of Axumite Kingdom. • Using map compare and contrast the territorial extent of the kingdom of Axum and that of the Zagwe kingdom. • Appreciate the achiements of the Zagwe kingdom as a national heritage. • Discuss the interrelationship among the languages spoken by the people in different parts of the Ethiopian region and the rest of Africa. • Explain the socio-economic and political features of the Christian highland kingdom. • Compare and contrast the political structures of the various states in the Ethiopian region and the Horn of Africa during the Medieval period. • Analyze the relationship of the Christian highland kingdom with various states existed in the Ethiopian region. • Express the relationship between the Christian highland kingdom with the Sultanate of Adal. • Analyze the consequences of the interstates conflicts in the Ethiopian region and the Horn of Africa during the 16th century. • Identify the factors for the population movements in Ethiopia and the horn. • Analyze the cultural and political impacts of the Oromo population movement on the Ethiopian region and the horn. • Write the political consequences of the Introduction of Catholicism in the Ethiopian politics. • Show appreciation on the achievements of the Gondarian period. • Assess the results of the social, economic and political instabilities during the Zemene Mesafint. • Verify the relationship among the inter-states existed in the Ethiopian region.

Area of competency	***Grade 9***
Medieval period and the development of capitalism	• Analyze the characteristics features of medieval society in Europe. • Explain the contribution of Islam to the achievement of Arab-Muslim civilizations. • Analyze the relationship between the Ottoman Turks and the European states. • Analyze the factors that led to the developments of early capitalism. • Compare and contrast the characteristic features of early capitalism with industrial capitalism. • Assess the economic, social and political consequences of the industrial revolution. • Evaluate the impacts of the different political, economic, intellectual and religious movements on the development of capitalism. (Renaissance, Reformation, Enlightenment, the American war of Independence and the French Revolution.)
Peoples and states of Africa up to 1880s	• List the super families of languages spoken in Africa. • Explain the main features of early states in Africa. • Analyze the consequences of the Trans Atlantic slave trade in Africa.

Minimum Learning Competencies for Grades 10 History

Area of competency	*Grade 10*
Industrial capitalism, nationalism and global conflicts	• Explain the development of nationalism and nation state • Outline the reason for European rivalry and cooperation in the scramble for Africa. • Analyze the basic and immediate causes of the two World Wars (W.WI & W.W.II) • Compare and contrast the consequences of the W.W.I and W.W.II
Post second world war global developments	• Evaluate the achievements and challenges of UNO over time. • Analyze the nature of International relations after W.W.II
Africa from colonization to independence	• State the process of colonial occupation of Africa by Europeans. • Evaluate the major resistances movements of the African people against European colonial expansion. • Analyze the nature of the major struggle against colonial rule and national liberation movements in Africa between the two World Wars. • Analyze the role played by Pan-Africanism for the independence and unity of Africa. • Evaluate the achievements and major challenges of the organization of African unity.
Peoples and states in ethiopia and the horn from 1855 up to 1991	• Demonstrate on a map the long distance trade routes of the 19th century in the Ethiopian region. • Analyze the economic, cultural and political impacts of the long distance trade upon the states and peoples of the Ethiopian region. • Evaluate the domestic reforms and foreign relations of Tewodros II. • Explain the administrative policy and foreign relations of Yohannis IV. • Analayze the motives behind the expansion to the South, West and South-East of the Ethiopian region during the 19th and in the beginning of the 20th centuries. • Show appreciation for the modernization policies of Menelik II. • Appreciate the scarification paid by the Ethiopian peoples to defend the Independence of their country. • Identify the similarity and the differences among the different political methods applied to restore Imperial authority or bring about political unification. • Recognize the reforms of Lij Iyassu. • Explain the major events of the power struggle from 1908-1930. • Analyze the emergence of autocracy and the domestic reforms of Haile Selassie I. • Evaluate the consequences of the fascist occupation and rule and appreciate the patriotic resistance against the fascist occupation and rule. • Analyze the socio-economic changes in Ethiopia under the Haile Selassie I's regime after liberation. • Express the causes of oppositions against Haile Selassie I's government. • Identify the causes and sources of the 1974 popular revolution in Ethiopia. • Evaluate the achievements and weaknesses of the military rule. • Analyze the factors that led to the fall of the military rule in Ethiopia in 1991.

Statement of Minimum Learning Competencies(MLCs) in Mathematics for Grade 9 & 10

Area of Competencies	*Minimum Learning Competencies*	
	Grade 9	***Grade 10***
I. NUMBER SYSTEM **The real number system**	• identify natural numbers and integers • define prime numbers and composite numbers • determine common factors and common multiples of pairs of numbers • show that repeating decimals are also rational numbers • identify irrational numbers • locate some irrational numbers on a number line. • define real numbers. • describe the correspondence between real numbers and points on a numbers line. • Realize the relationship between a power with fractional exponent and a radical form. • Convert powers with fractional exponent to radical form and vice-versa • perform any one of the four operation on the set of real numbers • use the laws of exponents to simplify expression. • give appropriate upper and lower bounds for a given data to a specified accuracy (eg. rounding off) • express any positive rational number in its standard form. • explain the notion of rationalization. • identify a rationalizing factor for a given expression. • use the Euclid's division algorithm to express given quotients of the form $\frac{p}{q}$ where, p > q.	
II. ALGEBRA **Solving Equations and Inequalities**	• Solve equations involving exponents and radicals • Solve simultaneous equation • identify the three cases of solutions of simultaneous equations (a unique solution, no solution, infinitely many solutions)	• describe sets using internal notation. • solve inequalities involving absolute value of linear expression • solve system of linear inequalities in two variables by using graphical method

Area of Competencies	*Minimum Learning Competencies*	
	Grade 9	***Grade 10***
	• Solve equations involving absolute value • Solve quadratic equations by using any one of the three methods • Apply Viete's theorem to solve related problems	• solve quadratic inequalities by using product properties • solve quadratic inequalities using the sign chart method. • solve quadratic inequalities using graphs
III. SETS	• describe sets in different ways • identify the elements of a given set • explain the notion "empty set" and "universal set" • determine the numbers of subsets of a given finite set and list them. • give the power set of a given set • determine the number of proper subsets of a given finite set and list them. • distinguishes between equal sets and equivalent sets • find equal sets and equivalent sets to a given set • determine number of elements in the union of two finite set. • describe the properties of "union" and "intersection" of sets. • determine the absolute complement of a given set. • determine the relative complement of two sets • determine the symmetric difference of two sets. • determine the Cartesian product of two sets.	
IV. RELATION AND FUNCTION	• define the notions "relation", "domain" and "range" • draw graphs of relations • use graphs of relation to determine domain and range • define function • determine the domain and range of a given function. • determine the sum difference, produced and quotient of functions. • Evaluate combination of functions for a given values from their respective domain. • sketch graphs of linear functions • describe the properties of the graphs of linear functions. • sketch the graphs of a given quadratic function.	• define the polynomial function of one variable • identify the degree, leading coefficient and constant terms of a given polynomial functions. • give different forms of polynomial functions • perform the four fundamental operation on polynomials • state and apply the polynomial division theorem • state and apply the Factor Theorem • determine the zero(s) of a given polynomial function • state and apply the Location theorem to approximate the zero(s) of a given polynomial function

Area of Competencies	*Minimum Learning Competencies*	
	Grade 9	***Grade 10***
IV. RELATION AND FUNCTION (cont.)	• describe the properties of the graphs of given quadratic functions • determine the maximum and minimum values of a given quadratic function	• apply the rational root test to determine the zero(s) of a given polynomial function. • sketch the graph of a given polynomial function. • describe the properties of the graphs of a given polynomial function • explain what is meant by exponential expression • state and apply the properties of exponents (where the exponents are real numbers) • express what is meant by logarithmic expression by using the concept of exponential expression • solve simple logarithmic equation by using the properties of logarithm • recognize the advantage of using logarithm to the base 10 in calculation • identify the "characteristics" and "mantissa" of a given common logarithm • use the table for finding logarithm of a given positive number and antilogarithm of a number. • compute using logarithm • define an exponential function. • draw the graph of a given exponential function • describe the graphical relationship of exponential functions having bases reciprocal to each other • describe the properties of an exponential function by using its graph. • define a logarithmic function • draw the graph of a given logarithmic function • describe the properties of a logarithmic function by using its graph • describe the graphical relationship of logarithmic function having bases reciprocal to each other. • describe how the domains and ranges of $y = a^x$ and $y = \log_a x$ are related • explain the relationship of the graphs of $y = a^x$ and $y = \log_a x$

Area of Competencies	*Minimum Learning Competencies*	
	Grade 9	*Grade 10*
IV. RELATION AND FUNCTION (cont.)		• solve equations involving exponents and logarithms as well • solve problems, involving exponential and logarithmic functions, from real life. • define the sine, cosine and tangent functions of an angle in the standard position. • determine the values of the functions for an angle in the standard position, given the terminal side of that angle. • determine the values of the sine, cosine and tangent functions for quadrantal angles • locate negative and positive angles • determine the values of trigonometric functions for some negative angles. • determine the algebraic signs of the sine, cosine and tangent functions of angles in different quadrants. • describe the relationship between trigonometrical values of complementary angles. • describe the relationship between trignonometrical values of supplementary angles. • determine the relationship between trigonometrical values of coterminal angles. • determine the trigonometrical values of large angles • construct a table of values for $y = \sin \theta$ where $-2\pi \leq \theta \leq 2\pi$. • draw the graph of $y = \sin \theta$ • determine the domain range and period of the sine function. • construct a table of values for $y = \cos \theta$, where $-2\pi \leq \theta \leq 2\pi$. • draw the graph of $y = \cos \theta$ • determine the domain, range and period of the cosine function.

Area of Competencies	*Minimum Learning Competencies*	
	Grade 9	***Grade 10***
IV. RELATION AND FUNCTION (cont.)		• construct a table of values for $y = \tan\theta$ where $-2\pi \leq \theta \leq 2\pi$. • draw the graph the tangent function $y = \tan\theta$. • determine the domain, range and period of the tangent function. • discuss the behavior of the graph of tangent function • define the cosecant function • determine the values of cosecant function for some angles. • define the secant function. • determine the values of secant function for some angles. • define the cotangent function • determine the values of cotangent function for some angles. • explain the concept of co-functions. • derive some of the trignometric identities. • identity the quotient identities. • solve problems related to trigonometrical identities. • solve real life problems using trigonometircal ratios
V. STATISTICS AND PROBABILITY **Statistical Data**	• differentiate primary and secondary data • collect data from their environment • classify and tabulate primary data according to the required criteria. • construct a frequency distribution table for ungrouped data • construct a histogram for a given data • interprate a given histogram • determine the Mean, Median and Mode of a given data • describe the purposes and uses of Mean, Median and Mode • identify the properties of the Mean of a given data (population function) • compute the measures of dispersion for ungrouped data (manually and using scientific calculator)	

Area of Competencies	*Minimum Learning Competencies*	
	Grade 9	***Grade 10***
	• describe the purpose and use of measures of dispersion for ungrouped data. • determine the probability of an event from a repeated experiment. • determine the probability of an event.	
VI. PLANE GEOMETRY AND MEASUREMENT	• show that the sum of the measures of the interior angles of a triangle is 180^0 • find the measure of each interior angle of a regular polygon • state properties of regular polygons. • determine the lines of symmetry of regular polygons • use the postulates and theorem on congruent triangle in solving related problems. • define similar plane figures and similar solid figures. • apply the SSS, SAS and AA similarity theorems to prove similarity of triangles • discover the relationship between the perimeters of similar plane figures and use this relationship to solve related problems. • discover the relationship between the areas of similar plane figures and use this' relationship to solve related problems. • discover the relationship between the volumes of similar solid's and use this relationship to solve related problems. • enlarge and reduce plane figures by a given scale factor. • solve real life problems using the concepts of similarity and congruency. • describe radian measure of an angle. • convert radian measure to degree measure and vice versa. • use the trigonometrical ratios to solve right angled triangles. • find the angle whose trigonometrical value is given (using trigonometrical table.) • find the trigonemetrical values of angles from trigonometrical table. • determine the trigonometrical values for obtuse angles using trigonometrical table.	• derive the distance formula (to find distance between two points in the coordinate plane) • apply the distance formula to solve related problems in the coordinates plane • determine the coordinates of points that divide a given line segment in a given ratio • define the gradient of a given line • determine the gradient of a given line (given two points on the line) • determine the equation of a given line • identify whether to lines are parallel or not. • identify whether two lines are perpendicular or not. • apply the properties of the slopes of parallel and perpendicular lines to solve related problems • apply the incidence theorems to solve related problems. • apply theorems on special quadrilateral in solving related problems • Apply the theorems on angles and arcs determined by lines intersecting inside, on and outside a circle to solve related problems • calculate the perimeters of regular polygons • calculate the areas of regular polygons • apply the formulae for calculating surface area and volume of prism and cylinder • calculate surface areas of a given pyramid or a cone

Area of Competencies	*Minimum Learning Competencies*	
	Grade 9	***Grade 10***
VI. PLANE GEOMETRY AND MEASUREMENT (cont.)	• discover the symmetrical properties of circles • use the symmetrical properties of circles to solve related problems • state angle properties of circles in their own words. • apply angle properties of circles to solve related problems • Find arc length, perimeters and areas of segments and sectors • calculate areas of triangles using Heron's formula, whenever the lengths of the three sides only are given. • calculate areas of parallelograms. • Calculate the surface areas of cylinders and prisms. • Calculate volumes of cylinders and prisms	• calculate the volumes of a given pyramid or a cone. • calculate the surface area of a given sphere • calculate the volume of a given sphere • define frustums of a pyramid and of a cone. • calculate the surface areas of frustums of pyramids of cones. • calculate the volumes of pyramids or of cones. • determine the surface area of simple composed solids. • calculate volumes of simple composed solids
Vectors in Two Dimensions	• differentiate Vectors from scalars quantities. • represent vectors pictorially • explain what is meant by magnitude and direction of a vector. • determine the sum of given vectors • multiply a given vector by a given scales. • express any given vector as position vector.	

Minimum Learning Competencies for Grades 9 & 10 Physics

Area of competency	*Grade 9*	*Grade 10*
	1. Vectors • Represent vectors analytically and graphically • List some properties of vectors • Find the sum and difference of two vectors; in the same direction, in opposite direction and perpendicular to each other. • Resolve a vectors in to its rectangular component • Find the magnitude and direction of resultant of several vectors using component method • Solve problems related to vectors • Demonstrate scientific enquiry skills such as ; observing, asking question, problem solving, applying concepts, measuring, making conclusion, interpreting illustrations data. **2. Motion in a straight line** • define the term uniformly accelerated motion • distinguish between velocity and acceleration • use equations of uniformly accelerated motion to solve numerical problems • identify displacement, velocity, acceleration as vector quantity in equations of uniformly accelerated motion • identify that free fall is a uniformly accelerated motion • distinguish between positive and negative accelerated motion • Mention the variation of acceleration due to gravity on the surface of the earth. • Plot S-t graph from distance and time data provided in a table. • Plot V-t graph from velocity and time data provided in a table • Interpret S-t, V-t and a-t graphs	**1. Motion in two dimension.** • Describe motion in two dimension • Define the term projectile and give common examples of projectile • Identify any projectile is moving under the influence of gravity • Describe the difference among the terms vertical, horizontal and inclined projection • Identify that projectile motion consists of two independent motions. • Solve problems related to projectile motion. • Identify the path followed by a projectile projected at an angle is parabolic. • Define uniform circular motion, tangential velocity, centripetal acceleration, centripetal force and centrifugal force. • Define rotational motion, angular displacement, angular velocity and angular acceleration. • Describe the relationship between angular quantities and linear quantities. • Solve problems related to uniform circular motion and rotational motion. • Describe rotational with constant angular acceleration • Solve problems using equations of motion with constant angular acceleration. • Define moment of inertia, torque, angular momentum and center of gravity. • State conservation of angular momentum and condition of equilibrium. • Describe rotational kinetic energy in terms of moment of inertia and torque in terms of angular acceleration and moment of inertia • State laws of universal gravitation and Kepler's Laws of planetary motion. • Describe the variation of acceleration due to gravity with altitude • Solve problems related to moment of inertia of a system of particles with respect to a given axis. • Solve problems related to rotational kinetic energy, torque, angular

Area of competency	*Grade 9*	*Grade 10*
	• Solve problems related to motion from graphs • Determine the relative velocity of body with respect to another moving in a straight line • Demonstrate scientific enquiry skills such as observing, predicting, classifying, problem solving, interpreting graph (illustrations), interpreting data, drawing conclusion, applying concepts. **3. Force and Newton's laws of motion** • Identify the force in nature • State Newton's first law and explain the relation between mass and inertia • Associate Newton's first law to their daily life activities • Define momentum as the product of mass and velocity • State Newton's second law in terms of the change in momentum • Solve common problems involving net force, mass and linear acceleration. • Identify units appropriate for measuring force • Describe the effect of balanced and unbalanced forces on a body • Determine the relationship between net force, mass, and acceleration • Define impulse and describe the relation between impulse and linear momentum • Define the term weight • Distinguish between mass and weight. • Explain the state of weightlessness • Resolve a force in to its rectangular components • Define concurrent and collinear forces • Find the magnitude and direction of resultant force of several forces acting on a body • Solve common problems involving bodies suspended by strings attached to a celling	momentum, conservation of angular momentum, conditions of equilibrium and center of gravity. • Distinguish between orbital velocity and escape velocity • Describe about geostationary satellite and explain their uses • Apply the law of universal gravitation to solve common problems. • Demonstrate scientific enquiry skills such as observing, predicting, comparing, communicating, problem solving, asking questions, applying concepts, analyzing. **2. Electrostatics** • State the law of conservation of charge an law of electrostatics • Describe the charging processes and charge distribution on a conductor of different shape • Identify that lightening is an electrostatic phenomenon and explain the role of lightening rod • Describe about the electrostatic danger in aircraft ***** and some application of electrostatics. • State coulomb's law • Define the terms: Electric field, electric field strength, electric field lines, test charge • Determine the magnitude and direction of force between two point charges. • Identify electric field inside a conductor is zero • Define the terms: electric potential and distinguish between absolute potential and potential difference. • Determine the electric potential at a given point due to a point charge and system of charges • Describe about equipotential lines and surfaces • Calculate the electric potential energy between two charges • Define the terms: capacitor, capacitance, parallel plate capacitor, dielectric. • Calculate the effective capacitance of capacitors in series, parallel and in series parallel combinations. • Determine the capacitance of a parallel plate capacitor with and without a dielectric and the energy stored • List some applications of capacitors

Area of competency	*Grade 9*	*Grade 10*
	• describe the effects of friction on motion • explain the differences among limiting, static and sliding friction • determine the relationship between frictional force, coefficient of friction and normal force • compare kinetic and static friction • state Hook's Law • Identify momentum as conserved quantity other than energy • State Newton's Third law and give examples where it is applied • Describe the first condition of equilibrium • Apply the first condition of equilibrium to solve related problems • Draw a free body diagram indicating all the force acting on a body • Demonstrate scientific enquiry skills such as; Observing, comparing, classifying, problem solving, applying concepts, making conclusion, interpreting data, relating cause and effect, designing experiment. **4. Work, Energy and power** • Define the term work • Define energy and its general classification as potential energy and kinetic energy • Describe the relationship between work and energy • Describe the relationship between force, displacement and the angle ǿ • Solve related problems involving work, force and displacement • Calculate the gravitational potential energy of a body in gravitational field • Calculate the kinetic energy of a moving body • Describe the law of conservation of mechanical energy and apply it in the solution of problems	• Demonstrate scientific enquiry skills such as observing, inferring, communicating, comparing, solving problem, applying concepts, relating cause and effect, asking questions, experimenting. **3. current electricity** • Define the terms electric current, receptivity, conductivity and resistance • Describe flow of electric charge in a metallic conductor as conventional and electron current • State Ohm's law and calculate resistance, current and voltage using Ohm's law • Solve problems related to electric current, receptivity, conductivity • Draw simple electrical circuit with resistors in parallel and series in different position of switches • Calculate equivalent resistance, current through each resistance, current through entire circuit and voltage drop across each resistor in any connection. • Mention the merit of galvanometer in ammeter and voltmeter and describe the connection of ammeter and voltmeter in electric circuit. • Define the terminal voltage, electromotive force(emf), internal resistance of a cell and show their relation ship. • Identify series and parallel connection of cells and compute the total emf of cells • Express electrical energy using in terms of current, voltage and resistance • Calculate electrical energy consumed, power dissipated and cost of electrical energy. • Describe with the aid of diagrams for sketch installation of house hold circuit. • Demonstrate the scientific inquiry such as: observing, inferring, classifying, comparing, making models, measuring, asking questions, experimenting, interpreting illustration, applying concept, solving problems. **4. Electromagnetism** • Define the magnetic field and identify that the magnetic field lines around straight current carrying wires are concentric circles

Area of competency	*Grade 9*	*Grade 10*
	• Explain the energy changes that takes place in an oscillating pendulum and spring mass system • Identify collision as elastic and inelastic collision • Mention momentum and kinetic energy is conserved during elastic collision • Define mechanical power and use the definition to calculate the power of a mechanical system • Explain about the wise use of energy • Demonstrate scientific enquiry skills such as; observing, predicting , classifying, communicating, problem solving, asking question, drawing conclusion, interpreting illustration, relating cause and effect, applying concept, designing experiments **5. Simple machines** • Describe the purpose of machine • List the simple machines and explain their uses • Determine the relationship between MA, VR and efficiency of a machine • Calculate the MA, VR and efficiency of simple machines • Categorize simple machines as force multiplier or speed multiplier or direction changer • Explain the role of simple machines in technology • Demonstrate scientific enquiry skills such as: observing, classifying, communicating, comparing, making, conclusion, measuring, asking questions designing experiment, problem solving, applying concepts, interpreting illustration, making model. **6. Fluid statics** • Identify the term fluid refers to both liquids and gases • Define the terms: pressure, density, relative density • Identify units used to measure pressure	• Determine the direction of magnetic field lines around straight current loop, solenoid • Calculate the magnetic field strength at a point due to straight current carrying wire current loop and inside a solenoid • Identify that a moving charge in a magnetic field current carrying conductor experiences a magnetic force. • Describe how moving charged particles are deflected by uniform magnetic field. • Solve problems on motion of charged particles in a magnetic field and current carrying conductor in a magnetic field • Determine the magnitude and direction of a force between two parallel current carrying wires separated by a distance d. • Show with the aid of diagram the direction of the forces acting on each sides of a rectangular current carrying wire placed in a magnetic field. • Determine the magnitude and direction of the torque acting on a current loop in a magnetic field • Describe how a moving coil galvanometer operates • Describe the working principle of a DC motor. • Define the terms: magnetic flux • State Faraday's Law of induction and Lenz's Law • Determine the magnitude and direction of induced emf or current using faraday's law of induction and Lenz's law respectively • Define the terms: Electromagnetic induction, inductance, self and Mutual Inductance. • Explain the working principle of an AC and DC generator • Explain the principle of operation of transformer • Solve problems involving inductance and transformer • Demonstrate scientific enquiry skills such as: observing, inferring, comparing, making models, applying concepts, measuring, interpreting illustrations, solving problems, relating cause and effects. **5. Introduction to Electronics** • Define the term electronics • State what is meant by harmonic emission • Describe the function of CRT and its use • Describe semiconductors in terms of charge carrier and resistance

Area of competency	*Grade 9*	*Grade 10*
	• Solve common problems involving pressure, force and area. • Identify that pressure due to a liquid at rest depends on depth. • Demonstrate the relationship between pressure, force and area. • Calculate the pressure due to a liquid at rest at any depth • Convert pressure values from one unit to another • Explain pascal's principle and its application • Explain Archimede's principle and its application • Explain floatation principle • Identify the forces acting on a body that is immersed or floating in a fluid • Demonstrate the understanding of buoyant force and the relationship between weight of fluid displaced and mass of floating body. • Demonstrate the understanding of buoyant force and the relationship between weight of fluid displaced and mass of floating body. • Define the terms: surface tension, cohesion, adhesion • Describe devices used to measure pressure and pressure difference • Describe the relationship among gauge pressure, absolute pressure, and atmospheric pressure • Demonstrate scientific enquiry skills such as: observing, communicating, comparing, measuring, asking questions, designing experiments, applying concepts, problem solving. **7. Temperature and heat** • Compare heat and temperature • Explain about thermal expansion of solids, liquids and gases • Identify units used to measure energy in thermal system	• Describe how semiconductors can be used in half wave rectification • Describe the behavior of semiconductor devices such as thermistor, LDR, LED, photodiode, Zender diode, transistor • Demonstrate scientific enquiry skills such as classifying, comparing, relating cause and effect, interpreting illustrations, asking questions **6. Electromagnetic waves and geometrical optics** • Describe the circumstances in which electromagnetic waves are produced and the nature of electromagnetic waves • Identify all electromagnetic waves travel at the same speed in a vacuum • Identify that EM waves emitted by the sun has a very wide continuous range of frequencies and therefore continuous range of wavelength. • List the components of EM spectrum and describe their uses • State the laws of reflection and describe the image formation by a plane and curved mirrors with the aid of a diagram. • List the nature of the image formed by a plane mirror convex mirror and identify that the nature of the image by concave mirror depend on the position of the object • Use the mirror equation to determine the nature and position of the image formed. • Describe the conditions in which refraction takes place and draw a diagram representing the passage of light rays through rectangular block • State the laws of refraction • Express Snell's law in terms of the ration of refractive indices, wavelengths and speeds • Apply the law of refraction to determine the refractive index of the medium through which light passes • Explain why a pool looks shallower than they are • Explain how total internal reflection occurs and describe its uses. • Define the terms angle of deviations and refracting angle of a prism and trace the ray through a prism • Describe the nature of image formed by thin lenses using ray diagram • Use thin lens formula to determine the nature and position of the image formed • Apply the definition of magnification and power of a lens to determine

Area of competency	*Grade 9*	*Grade 10*
	• Solve problems involving linear, real and volume expansion • Solve problems related to expansion of liquids • Define the terms :specific heat capacity, heat capacity, and latent heat • State the law of heat exchange • Solve problems involving heat exchange • Demonstrate scientific inquiry skills such as observing, communicating, comparing, measuring, inferring, making conclusion, problem solving, applying concept, and designing experiments **8.Wave motion and sound** • Define the terms: wave pulse, train of waves • Differentiate between mechanical and electromagnetic waves and give examples of each • Identify waves as transverse and longitudinal and give examples of each • Define the terms used to describe waves; crest, trough, wavelength and amplitude • Use wave speed formula to solve problems related to wave motion • Describe the common properties of waves: reflection. refraction diffraction and interference • Describe the production and propagation of sound • Compare the speeds of sound in different media • Determine the speed of sound in air at any give temperature • Explain reflection, refraction diffraction, and interference of sound • List some applications of reflections of sound • Define the terms used to describe the characteristics of sound • Demonstrate scientific inquiry skills as observing, classifying, communicating comparing asking questions, measuring and applying concepts	magnification and power of a lens • Draw a ray diagrams showing how images are formed by a combination of lenses in simple microscope and simple telescope • Describe with the aid of a diagram how image is formed in the retina of human eye and identify the types of lenses used for correction of eye defects. • Describe how dispersion of light occurs in a prism with the aid of a diagram • Explain how colors can be mixed and objects obtain their colors • Demonstrate scientific enquiry skills such as: Observing, inferring, classifying, comparing, interpreting illustrations, applying concepts, problem solving, asking questions, measuring, making models, experimenting, relating cause and effect.

Grades 9 and 10 Physical Education

Area of competencies	*Grade 9*	*Grade 10*
Basic concepts of Physical Education	• Define the term Physical Education in their own words • List 3-4 objectives of Physical Education • List 2-3 components of Physical fitness • Define the term sport • Mention the characteristics and roles of sport	• Describe 2-3 contribution of Physical Education • List 2-4 guide lines of physical fitness • Describe contributions of physical fitness to improve wise use of leisure time & reduce stress, academic achievement • Explain the importance and methods of developing cardio vascular endurance • Describe the objectives and types of National Sport competition. • Mention the names of excellent contributors for the development of sport in Ethiopia
Fundamental skills of Gymnastics	• Describe 2-3 body mechanics in successful performance of cartwheel and hand stand • Demonstrate handstand activity for 3-5 seconds • Demonstrate 2-3 cartwheel to both sides applying the body mechanics. • Demonstrate jump to front support and turn over on horizontal bar	• Demonstrate appropriate dive roll applying body mechanics • Describe 2-3 key body mechanism in performing dive roll • Demonstrate hip pull over on horizontal bar
Ethics and the art of self-defense	• Define the terms ethics and self-defense • Describe the historical background of self-defense. • List 2-3 importance of self-defense. • Demonstrate fore-first punch by applying proper technique. • Demonstrate the techniques of release from front one hand grabs and defense front huge.	• Describe the strategies in self -defense. • Demonstrate the techniques of front stance. • Describe 2-3 body mechanics properly to perform elbow strike, upper block, middle block and groin kick. • Demonstrate the techniques of elbow strike, upper block, middle black and groin kick. • Demonstrate the techniques of release from two chocking and release from one hand front collar grab. • Describe 2-3 body mechanics properly to perform release from chocking and release from one hand front collar grab. • State 2-3 benefits gained from cooperation in self-defense activities.

Area of competencies	***Grade 9***	***Grade 10***
Basic skills of ball games	• Demonstrate correct volley pass for arm pass using correct stance, proper contact, and follow through. • List at least three body mechanics that are used in performing overhead and under arm service. • Demonstrate correct underhand and overhead serve for a target consistently. • List 3-4 important body mechanics that are used in performing underhand and overhead serve. • Recognize the social benefits of participating in volleyball game such as cooperation, tolerance, honesty, responsibility etc. • Apply the techniques and rules in game situation.	• Demonstrate correct passing with inside of the foot and receiving showing correct stance, proper contact, and follow through. • List 3-4 body mechanics that are used in performing passing and receiving. • Demonstrate shooting for a target with full in step. • Apply the techniques and rules in game situations.
Athletics	• List 2-3 fundamental skills of short distance run • Describe 2-3 body mechanics in long jump • Demonstrate sprint run • Demonstrate long jump	• Demonstrate javelin throw • Describe 3-4 body actions necessary for javelin throw • Demonstrate middle distance run • List 3-4 body actions necessary for middle distance run